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A Study of Hospitalization Anxiety

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A Thesis

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I. Introduction

In February of 1965 the following letter to the editor appeared in the Meyersdale Republican, a weekly newspaper published in a small town in western Pennsylvania (32):

Writer Praises Tender Care at Hospital Here

Dear Editor:

Two weeks ago I visited with my wife. I am not condemning our very dear friend of ours in your larger hospitals as we have Meyersdale Community Hospital here, for I fully realize they As I sat there each day I couldn't begin to operate on such help but take notice to all the basis, with so many people receiving tender care, love, and humane quiring attention.

treatment that was given there. The reason I am writing this

I was so impressed with the in your newspaper is for the whole hospital in general, that's simple reason that we as human beings don't count our blessings expressing my feelings. I am en- enough for what we have in our closing a copy with this letter, so own backyards. A stranger can that you may see I am telling the appreciate this more, knowing by truth.

Being used to large hospitals, your own hospital there, it was such a marvel to me to see such thoughtfulness and care given to our late friend and to

Mrs. Gerald Hodder
205 Broadway Extension
East McKeesport, Pa.

It called to the present author's attention the notion that small and large hospitals may differ in their treatment of patients or, more specifically, that the levels of anxiety among patients in hospitals of one size may be different from those among patients in hospitals of other sizes.

In the following three years the author conducted research into the nature, extent and distribution of hospitalization anxiety in a group of 408 medical and surgical patients in four Connecticut hospitals. The initiation, implementation, results and discussion of this research are reported in the following study.

II. Review of Selected Literature

A comprehensive review of the literature pertinent to the present study of hospitalization anxiety is difficult to give in this report due to the problems involved in defining the limits of such a review. Unfortunately, we were unable to find any previous studies of hospitalization anxiety in medical and surgical patients in large and small hospitals. However, if we were to broaden the scope of the review to include studies of the concerns of various subgroups of hospital populations, notions about the role of the hospital and hospitalization, development and use of anxiety scales, and even the concepts of anxiety and institutionalization, we should have an impossibly large task. It is equally difficult to select only a few articles or books within each category without prejudicing the review.

The researcher who examines the major contributions to the fields mentioned above is usually presented either with a collection of statistical conclusions derived from studies of patients with minimal similarity to the patient population of the present study or with a collection of ideas based on various authors' personal experience and individual observations, often with little attempt to quantify or document these observations. However, we do not mean to deride these two types of studies since both have contributed to our understanding of hospitalization anxiety and have encouraged us to attempt to study a selected patient group in a manner which can be subjected to statistical analysis.

Having mentioned a few of the problems encountered in preparing a review of the literature we shall discuss and summarize some of the major articles and books which have been particularly helpful in laying the foundations for the present study. Our aim is more to give the background for this particular project than to pretend to have collected and reviewed all relevant literature.

Regarding the situation in which illness occurs, Hinkle and Wolff (17) have observed that illnesses often begin or worsen during very stressful periods of life, those times "when an individual perceives his life situation as peculiarly threatening to him." They found a positive association between the occurrence of illness and (a) adverse childhood experiences, (b) periods of objective changes in interpersonal relations and (c) increased demands of social situations, although they stress that these are far from the only reasons for varying amounts of illness in single patients at different times.

When the illness becomes sufficiently serious, the patient is required to leave his home and enter the hospital. The result of this move is that a person who is stressed both by a physical disability and probably by other alterations in his living pattern must enter an institution with an atmosphere quite different from that to which he is accustomed. The hazards of this change are both medical and psychological.

Schimmel (40) has studied the medical hazards encountered by 1,014 patients at a major university medical center. He has reported that 20 percent of these patients had their hospitaliza-

tion complicated by acceptable diagnostic or therapeutic measures deliberately instituted in this hospital. These incidents did not include inadvertent errors, post-operative complications, or non-specific psychiatric disturbances.

Mittlemann et al (33) surveyed 450 medical and surgical admissions and found a 30 percent incidence of mild or serious personality disturbances during hospitalization. The authors felt that in approximately one-third of the disturbed patients the personality disorder was precipitated by the illness and in one-third a minor pre-existing disorder was aggravated by the illness. Among the remaining patients were some with insignificant illness, some suffering from trauma resulting from personality disturbances, and a group in whom it was impossible to determine whether the psychological or physical disorder occurred first.

The specific worries and anxieties of the hospitalized patient have been examined by numerous authors (3,9,14). Barnes (3) stressed the primacy of illness among the concerns of physicians and nurses and asserted that "patients....know they do not come first." She viewed the hospital as job - or task-oriented, rather than person-oriented, with the result that communication within the hospital becomes a major problem. Cartwright (9) and Spiegel and Demone (41) reported that over one-half of the patients studied by their groups complained of unsatisfactory patient-staff communication.

Girdwood and Ballinger (14) emphasized the wide variety of common worries of patients by listing the following twelve

categories of concern: feeling of strangeness and helplessness, worry about relatives and dependents, worry about employment situation, financial problems, concern about the illness itself, fear of diagnosis, fear of pain, fear of operations or other therapy, fear of physical handicap or deformity, guilt feelings, fears of getting well and worries about death. Mathew (31) pointed out that these anxieties may become more apparent after the immediate danger of the illness precipitating hospitalization had passed.

Cartwright (9) reported an extensive study of 739 patients in several British hospitals. The concerns of these patients were quite similar to those listed by Girdwood and Ballinger (14). She specified the numerous fears of patients about the effects of illness and hospitalization on their ability to earn a livelihood following the hospitalization, not to mention loss of income during hospitalization.

Cartwright's study included patients in hospitals of varying sizes and she found several differences between large and small hospitals. While patient dissatisfaction with communications did not seem to vary from hospital to hospital, the patients in smaller hospitals (fewer than 100 beds) had better rapport with physicians. This difference was not demonstrated in the relations of patients to nursing staffs. She also found greater satisfaction with medical treatment among patients in smaller hospitals, where 3 percent expressed doubts about their medical care, than in larger hospitals, where 16 percent expressed doubts.

Differences between large and small hospitals established in other studies included the observation that personnel accident and sickness rates increased with the size of the hospital (36,37) and the finding that the quality of food and the efficiency with which it was served were better in the small hospitals (35).

The university or teaching hospital poses several additional challenges to the patient's adjustments to hospitalizations. Patients are often aware of the fact that they are being used as material for instruction and a significant percentage of them express displeasure at this practice (21). Kaufman (26) pointed out that ward rounds in teaching hospitals may have a serious emotional impact on the patient when strict attention is not paid to the conduct of these rounds.

In addition to the general worries which patients may have as a result of being ill and being hospitalized, there are some concerns which appear to be related to specific illnesses or specific modes of therapy. Surgical patients have been the subjects of numerous studies including the intensive investigations by Janis (23), who stressed the role of childhood experiences in the formation of subsequent attitudes and reactions to potential bodily mutilation. The threat of mutilation according to Janis, "will tend to reactivate the seemingly outgrown patterns of emotional response which had originally been elicited and reinforced during the stress episodes of early childhood." He saw the feelings of helplessness and loss of control which occur with surgery as analogous to the infantile or childhood situation and pointed out the need for constant reassurance.

In a study of 51 patients undergoing major abdominal surgery, Lindemann (28) described a rather consistent constellation of post-operative symptoms including restlessness, sleeplessness, agitation and preoccupation with depressive thought content. This condition occurred more frequently after pelvic operations than after upper abdominal operations, suggesting that the area involved as well as the nature of the therapy may predispose the patient to certain types or manifestations of anxiety.

Attempts to measure anxiety by the use of various scales have been made by numerous investigators (5, 39, 58). Whitehorn (49) emphasized one major problem in the direct assessment of anxiety when he asserted that the apprehension occurring with illness and hospitalization may occasionally be seen only through the patient's abnormal defense against it.

Buss et al (6), on the other hand, claimed that measuring the specific denotations of anxiety manifestations resulted in reliable ratings. This group studies 73 neuropsychiatric patients and found a 93 percent correlation between the arithmetic summation of the manifestations and the clinical impressions of anxious behavior. Barclay (2) discussed the effective use of thirteen scales and tests to measure or evaluate anxiety.

In this paper we shall concentrate on three major scales: the Taylor Manifest Anxiety Scale, the Saslow Screening Inventory or Saslow Psychosomatic Inventory, and the Cornell Medical Index. The scale devised by Saslow (39) has been found to distinguish severely disturbed patients with about 85 percent accuracy when

given to a population containing both medically and psychiatrically ill patients. This brief scale is a measure of psychological and physical reactions to anger and to anxiety-producing situations (30).

The Taylor Manifest Anxiety Scale (47,48), which will be discussed more fully in Part IV:E, consists of fifty statements selected from the Minnesota Multiphasic Personality Inventory which have been found to relate most reliably to manifest anxiety. This scale has been widely used to select the most and least anxious individuals from various groups for further physiological (11,24) and psychological (6, 38) studies and comparisons.

The Cornell Medical Index, devised as an adjunct to the medical interview (4,5), includes questions about both mental and physical health. Both groups of questions have been found useful in the evaluation of emotional status. The assessments made by the CMI have been found to correlate well with the TMAS and the Saslow scale (1).

Matarazzo et al (30) have discussed some of the difficulties encountered in the use of anxiety scales and illustrated this with comments on the common observation of higher anxiety scores in women than in men (25). They found a somewhat greater number of both major and minor medical illnesses in women and note that women tend to seek treatment sooner after symptoms appear than do men. Considered in conjunction with the observation of Mandler et al (29) that there are different levels of awareness of autonomic changes among people and that those more

acutely aware tend to overestimate their physiological changes, this suggests that in any patient comparison based on anxiety associated with illness or hospitalization one must be aware of both the physical and the psychological differences of the groups to be studied.

III. Definition of Hospitalization Anxiety

Any study which presumes to measure an entity should presumably include both a definition of the entity to be measured and a discussion of the plausibility of measuring it. Although our primary purpose in this study was not to define hospitalization anxiety, we shall provide a working definition to place the measurements and comparisons into a meaningful context.

Descriptively hospitalization anxiety is "that anxiety which is associated with or experienced during hospitalization." The circularity of this statement is obvious and such a definition adds little to understanding the condition to be studied unless anxiety is defined. In developing such a definition we might profitably refer to some ideas about anxiety advanced by other authors.

In The Problem of Anxiety (13) Sigmund Freud listed three attributes of the anxiety state: "(1) a specific unpleasurable quality, (2) efferent or discharge phenomena, and (3) the perception of these." To paraphrase this statement, anxiety is an unpleasant condition which is characterized by psychological and physiological phenomena of which the person is aware. Freud stated that a situation of danger is the occasion during which anxiety arises. The prototype of this situation is supposed to be the birth process. Other characteristics of anxiety are that it may arise during or as a reaction to feelings of helplessness, perception of loss or separation from an object, or loss of an object's love (13).

Karen Horney (20) also emphasized the roles of separation and helplessness in anxiety. Speaking of the situation of the child, she described the early experience of anxiety as "the feeling....of being isolated and helpless in a potentially hostile world." Among the environmental factors which can produce this insecurity she listed: "direct or indirect domination, indifference, erratic behavior, lack of respect for....individual needs, ...lack of reliable warmth, isolation from peers , injustice, discrimination, unkept promises, hostile atmosphere, and so on." (20).

For Harry Stack Sullivan, as for Freud and Horney, anxiety has its roots in infantile and childhood experiences.

In The Fusion of Psychiatry and Social Science (46), he wrote:

In the study of any anxiety-fraught experience, one discovers that the particular pattern of the situation which provokes anxiety can be traced to a past relationship with particular significant people in the course of which one experiences anxiety that was more or less clearly observed to relate to particular interaction with them.

Anxiety is a "peculiar discomfort" (43) which results from the "eruption into awareness of a threat to security" (45). The threat may be real or imagined (16), but it is the awareness which is most significant. "Anxiety is more important, in a way, than the thing that called it out, and its importance, of course, is from the standpoint of personal awareness" (45). In Conceptions of Modern Psychiatry (43), Sullivan pointed out a characteristic of anxiety which makes the study of the entity difficult, the tendency of anxiety to be abstracted from the situation that produces it. He wrote:

When there is anxiety, it tends to exclude the situation that provoked it from awareness..... The tendency is to move away from, rather than simply to grasp, the factors making up the situation.

Taking the above notions into account, we may extract a few characteristics common to most definitions and arrive at a definition for use in this study. In general, anxiety is an unpleasant experience usually perceived as a result of an environmental change and experienced as a threat to one's security. The essence of the experience is verbalized with difficulty, if at all, and is more readily studied through its indirect manifestations which may include hostility, guilt, aggression, and numerous behavioral traits. These manifestations may take the form of psychological and somatic dysfunctions which share with the inciting incident only the common denominator of association with the unpleasant experience which we shall call anxiety.

Having given our working concept of anxiety, we shall define hospitalization anxiety as that anxiety which occurs in the hospital. It should be emphasized that this means anxiety during hospitalization, not simply anxiety about hospitalization. While these two notions are not mutually exclusive we feel that the broader definition is more pertinent to this study which will explore the concerns of patients while in the hospital rather than try to determine their feelings about hospitalization. Study of the latter would properly require interviews before and after hospitalization.

In this study we shall not attempt to explore the causes of anxiety (although some speculations on this subject will be presented in discussion), but shall restrict ourselves

to the listing and counting of some manifestation of anxiety. Of course, equating the number of manifestations of anxiety with degrees of anxiety involves some assumptions and possibly some fallacies of which we must be aware. These include the following:

1. We are equating extant anxiety with communicated anxiety or at least assuming that there is a direct proportionality between the two. It may well be that some very anxious patients are unwilling or unable to communicate their anxiety by listing its manifestations.

2. We are equating levels of anxiety with the number of manifestations of anxiety (i.e., saying that a patient who affirms a greater number of examples of anxiety is more anxious than a patient who affirms a lesser number). It may occasionally be the case that a patient's concerns are focused on one or two problems which cause great anxiety in the absence of a multitude of other manifestations.

3. We are assuming that a list of manifestations of anxiety can be prepared which is sufficiently broad that any anxious patient will find enough of his symptoms represented to give a fairly complete picture of his anxiety state. It is conceivable that some patients may be quite anxious and yet find few or none of their symptoms on any given list.

In the present study it was impossible to correct for these assumptions and possible fallacies. We could only be aware that they exist and attempt to speculate on their role in the study. The result of these assumptions is that, for purposes of this study we defined hospitalization anxiety as a particular score on the scale we use to measure it.

IV. Materials and Methods

A. Hospital Selection

It was decided that all hospitals in this study should be:

1. Voluntary, non-profit (not Church-or government associated)
2. General
3. Short-term care institutions,

according to the classification established by the American Hospital Association and published in Hospitals (Journal of the American Hospital Association). Church-and government-affiliated hospitals, as well as institutions dealing in a limited range of diseases (e.g. pulmonary or chronic care) were eliminated in order to keep variations among the hospitals to a minimum.

In addition, the large hospitals had to have more than 350 beds and be located in a city with a population of greater than 100,000. The small hospitals had to have fewer than 100 beds and be located in a town of less than 10,000 people.

The following Connecticut hospitals satisfied these criteria according to figures established in the 1960 census and the 1965 survey of hospitals:

<u>Large Hospital</u>	<u>Beds</u>	<u>City or Town</u>	<u>Population</u>
Bridgeport Hospital	429	Bridgeport	156,748
Hartford Hospital	800	Hartford	162,178
Yale-New Haven Hospital	717	New Haven	152,048
Waterbury Hospital	394	Waterbury	107,130

<u>Small Hospital</u>	<u>Beds</u>	<u>City or Town</u>	<u>Population</u>
New Milford Hospital	77	New Milford	8,318
Rockville City Hospital	62	Rockville	9,478
Sharon Hospital	94	Sharon	2,100
Bradley Memorial Hospital	50	Southington	9,952
Johnson Memorial Hospital	65	Stafford Springs	3,322
Litchfield County Hospital	85	Winstead	8,136

It had originally been planned to study one large and one small hospital during the summer of 1965, with further work to be based on the results of this summer. Hartford Hospital was eliminated because the large number of beds would make the interviewing of a significant percent of the admissions difficult. Yale-New Haven Hospital, with a similarly large number of beds, is divided into a university service and a community service, each with approximately 350 beds. It was decided to choose among the Waterbury Hospital, the Bridgeport Hospital, and the university service at the Yale-New Haven Hospital for the large hospital.

Of the six small hospitals, the Bradley Memorial Hospital in Southington was selected because of its proximity to New Haven. Letters were sent to the administrator and medical staff at each of the four selected hospitals. Waterbury, Bridgeport, and Yale-New Haven expressed interest in the project and indicated their desire to co-operate in the study. The Bradley Memorial Hospital, however, refused to participate.

As a result of this correspondence it was decided to study two large hospitals during the summer of 1965 and two small

hospitals during the summer of 1966. The large hospitals selected were the Waterbury Hospitals and the university service of the Yale-New Haven Hospital. The Sharon Hospital and the New Milford Hospital were selected as the small hospitals because their proximity to each other would permit the interviewing of patients in both hospitals on the same day.

The following table compares the four hospitals studied:

Hospital	Comparison of Hospitals			
	<u>Yale-New Haven</u>	<u>Waterbury</u>	<u>Sharon</u>	<u>New Milford</u>
Beds	717	394	94	77
Admissions	25,348	13,008	2,818	2,339
Total Expense(000)	\$15,315	\$6,099	\$1,386	\$1,078
Payroll (000)	\$ 9,584	\$3,972	\$ 898	\$ 689
Personnel	2,809	886	198	134
Payroll/Total Expense	62.5%	65.2%	64.8%	63.9%
Average Salary (Payroll/Personnel)	\$ 3,410	\$4,480	\$4,540	\$ 5,140
Expense/Bed	\$21,350	\$15,500	\$14,750	\$14,000
Expense/Admission	\$ 605	\$ 469	\$ 492	\$ 462
Payroll/Admission	\$ 378	\$ 305	\$ 319	\$ 295
Admission/Personnel	9.0	14.7	14.2	17.5
Admission/Bed	35.4	33.0	30.0	30.4
Personnel/Bed	3.9	2.2	2.1	1.7
Occupancy (1966)	85.2%	75.9%	67.0%	57.1%
City Population	152,048	107,130	2,100	8,318

The above statistics are from Hospitals (Journal of the American Hospital Association). Statistics for the Yale-New Haven Hospital and the Waterbury Hospital are taken

from the 1965 data contained in Hospitals, 40:51-53, 1966. Statistics for the Sharon Hospital and the New Milford Hospital are based on the 1966 survey contained in Hospitals, 41:59-60, 1967. Each set of statistics, therefore, pertains to the hospital for the year in which it was studied in this project. Occupancy figures were available only for 1966. It is not felt that they represent any significant change from the 1965 occupancy figures for Yale-New Haven and Waterbury.

B. General Procedure for Study at Each Hospital

Initial arrangements at each hospital were made with the administrator and with the chief of each service involved. Subsequently all members of the medical staff, nursing staff, and pertinent ancillary personnel were informed of the general nature of the project and of the specific manner in which the interviews were to be conducted.

The general procedure for selecting patients and obtaining permission for their participation was essentially the same in each hospital. A list of all patients admitted each day was obtained from the admissions office. All patients who satisfied the following criteria were listed: (1) not admitted through the emergency room, (2) aged 21 or over, and (3) not admitted to psychiatric or obstetric service.

An interview permission form and a doctor's rating form was attached to the chart of each patient satisfying these criteria. No patient was seen until the physician indicated his permission and signed the form. The doctor's rating form was removed from the chart when it had been completed, either before or after the interview.

All patients for whom interview permission had been obtained were interviewed on or about the fourth day of hospitalization. No patient was interviewed before the fourth day and, with few exceptions, most patients were interviewed within the first six days.

At the time of the interview the study was explained to each patient as an investigation of those factors which cause

patients to worry when they are in the hospital. It was stressed with the patient that his comments and answers would be held in confidence and not discussed with his physician or any other member of the medical or nursing staffs. If the patient agreed to participate in the study he was then administered the complete questionnaire. Each question was posed orally by the examiner and the patient's reply was recorded by the examiner.

At the conclusion of the interview the patient was evaluated by the examiner according to the scales on the last page of the questionnaire. Finally, the head nurse was asked to evaluate each patient who had been interviewed during the day.

C. Selection of Patients

The following criteria were used for the selection of patients:

1. Patient not admitted through emergency room.
2. Patient aged 21 or over.
3. Patient not admitted to psychiatric or obstetric service.
4. Patient able to articulate his feelings reasonably.
5. Patient not in acute distress at time of interview.
6. Patient admitted for at least 4 days.

The following table lists the reasons for the selection or elimination of each patient initially eligible for this study.

Patient Selection

<u>Hospital</u>	<u>Y-NH</u>	<u>W</u>	<u>S</u>	<u>NM</u>
Number of admission days included	23	18	32	43
Patients satisfying criteria 1-3 according to admission office	287	315	159	134
Permissions denied by physician	17	14	0	3
Requests receiving no attention	43	55	2	12
Permissions granted	227	246	157	119
Patients not satisfying criteria 4-5	27	37	15	15
Patients not satisfying criterion 6	69	60	52	52
Patients satisfying all criteria	131	149	90	52
Patients refusing to be interviewed	1	4	0	0
Interviews completed	124	143	89	52
Eligible patients missed	6	2	1	0

A total of 895 patients satisfying the first three criteria were admitted during the study time allotted to each hospital. Requests for permission to interview these patients were denied by the physicians in 34 cases (3.8%) and received no attention in 112 cases (12.5%). The refusals were often accompanied by an explanation, usually mentioning some physical or psychological difficulty in the patient. The large number of requests receiving no attention may to some extent be attributed to difficulties of communication between the examiner and the physicians involved, since most of these occurred at the large hospitals where the examiner did not meet many of the physicians in advance of the study.

Of the 749 patients on whom permission for interview was granted, 94 (12.5%) were unable to participate either because of illness or inability to communicate. Permissions were often granted on patients who were comatose, acutely ill, or unable to speak or understand English to the extent required for meaningful completion of the questionnaire. In addition, 129 patients (17.2% of the 749) were discharged before the fourth day of hospitalization and were thereby disqualified.

A total of 422 patients satisfied all criteria and 408 (97%) of these patients were interviewed. Five patients refused to be interviewed. Nine eligible patients were missed due to inadequate time for interviews on certain days or due to illness of the examiner.

D. Comparison of Hospital Populations

In order to determine whether the patient populations at the various hospitals were comparable and where the differences lay if they were not comparable the following tables were constructed from the demographic data obtained from each patient at the time of the interview:

Chi² and p values refer to differences between individual hospitals and the total patient group. If patients are distributed randomly with respect to a given parameter, the chi² will be low and the p value will be close to 1 for that table. On the other hand, if patient populations differ markedly from each other, the chi² will be high and the p value will be small.

<u>Age</u>	<u>Total</u>		<u>Yale</u>		<u>Wtby</u>		<u>Sharon</u>		<u>NM</u>	
	pts	%	pts	%	pts	%	pts	%	pts	%
21-29	48	12	19	15	16	11	6	7	7	14
30-39	53	13	24	20	11	8	9	10	9	17
40-49	59	14	17	14	26	18	11	12	5	10
50-59	85	21	22	18	36	25	16	18	11	21
60-69	76	19	23	18	26	18	19	21	8	15
70-	87	21	19	15	28	20	28	31	12	23

$$\chi^2 = 23.75$$

$$p = .05 < .10$$

The patients at Waterbury and New Milford distributed much like those of the total group. The Yale patients tended to be younger (35% under 40 vs. 25% of total group under 40), while those at Sharon tended to be slightly older than the average (52% above 59 vs. 40% of average above 59).

<u>Marital Status</u>	Total		Yale		Wtby		Sharon		NM	
	pts	%	pts	%	pts	%	pts	%	pts.	%
Single	44	11	13	10	20	14	7	8	4	8
Mar. & Remar.	62	64	80	64	86	60	57	64	39	75
Div. & Sep.	37	9	15	12	11	8	8	9	3	6
Widowed	65	16	16	13	26	18	17	19	6	12

$$\chi^2 = 8.38 \quad p = .30 < .50$$

The marital status of the patients did not vary to any great extent from hospital to hospital.

<u>Occupation*</u>	Total		Yale		Wtby		Sharon		NM	
	pts	%	pts	%	pts	%	pts	%	pts	%
Upper	71	17	18	14	25	18	12	14	16	31
Middle	208	51	68	55	74	52	45	51	21	40
Lower	128	31	38	31	44	31	31	35	15	29

$$\chi^2 = 8.71 \quad p = .10 < .20$$

Except for a larger than average group of patients in upper occupational levels at New Milford Hospital, there were no striking variations among hospitals according to this parameter.

<u>Education*</u>	Total		Yale		Wtby		Sharon		NM	
	pts	%	pts	%	pts	%	pts	%	pts	%
12 years	91	22	23	18	35	24	16	18	17	33
10-12 years	196	48	68	55	63	44	42	48	23	44
10 years	120	30	33	27	45	32	30	34	12	23

$$\chi^2 = 7.97 \quad p = .20 < .30$$

Again New Milford had a somewhat larger than average group of patients with some college experience but the remaining groups clustered around the average figures.

*Explanation of occupation, education, and social status scales is presented in Section IV:G.

<u>Social Status</u>	Total pts	%	Yale pts	%	Wtby pts	%	Sharon pts	%	NM pts	%
I	19	5	9	7	4	3	4	4	2	4
II	37	9	5	4	13	9	6	7	13	25
III	60	15	18	14	24	17	12	14	6	12
IV	178	44	52	42	66	46	41	47	19	36
V	113	28	40	32	36	25	25	28	12	23

$$\chi^2 = 24.98 \quad p = .01 < .02$$

While 14% of all patients were in the upper two social status groups, 29% of the New Milford patients were in these two groups. Otherwise, there were no striking variations from the expected figures.

<u>Religion</u>	Total pts	%	Yale pts	%	Wtby pts	%	Sharon pts	%	NM pts	%
Cath.	178	44	66	54	71	50	29	33	12	23
Prot.	211	52	51	42	66	47	59	66	35	69
Jewish	16	4	6	5	5	4	1	1	4	8

$$\chi^2 = 25.01 \quad p = < .0005$$

Both large hospitals had more Catholic patients than Protestant patients while the opposite was true at the small hospitals. There were very few Jewish patients in this study and for this reason it is difficult to determine whether the different numbers of Jewish patients are significant.

<u>Country of Birth</u>	Total pts	%	Yale pts	%	Wtby pts	%	Sharon pts	%	NM pts	%
USA	344	88	106	90	115	86	77	86	46	88
Other	49	12	12	10	19	14	12	14	6	12

$$\chi^2 = 1.06 \quad p = .70 < .80$$

The number of immigrant patients did not vary from hospital to hospital in this study.

<u>Race</u>	Total	pts	%	Yale	pts	%	Wtby	pts	%	Sharon	pts	%	NM	pts	%
White	381	93		105	85		137	96		88	99		51	98	
Negro	27	7		19	15		6	4		1	1		1	2	

$$\chi^2 = 22.76 \quad p < .0005$$

Sharon, Waterbury, and New Milford Hospitals had approximately the same percentage of Negro patients. Yale-New Haven Hospital, however, had a much higher percentage, approximately four times as great as the percentage in Waterbury.

<u>Sex</u>	Total	pts	%	Yale	pts	%	Wtby	pts	%	Sharon	pts	%	NM	pts	%
Male	180	44		45	36		66	46		46	52		23	44	
Female	228	56		79	64		77	54		43	48		29	56	

$$\chi^2 = 5.39 \quad p = .10 \quad < .20$$

The slight female predominance was exaggerated at Yale-New Haven and reversed at Sharon. The differences were not marked.

<u>Number of Previous Hospitalizations</u>	Total	pts	%	Yale	pts	%	Wtby	pts	%	Sharon	pts	%	NM	pts	%
0	23	6		4	3		7	5		7	8		5	10	
1-3	163	40		44	36		61	43		36	40		22	42	
4-6	118	29		35	28		39	27		30	34		14	27	
7-	104	26		41	33		36	25		16	18		11	21	

$$\chi^2 = 10.70 \quad p = .20 \quad < .30$$

Yale-New Haven had a few more patients in the group with seven or more hospitalizations and Sharon had fewer patients in this group than the average figures. The differences were not great, however.

Type of Therapy	Total pts	%	Yale pts	%	Wtby pts	%	Sharon pts	%	NM pts	%
Medical	178	44	39	32	56	39	59	66	24	46
Surg-observe	21	5	9	7	10	7	1	1	1	2
Surg-pre-op	26	6	9	7	10	7	6	7	1	2
Surg/post-op	183	45	67	54	67	47	23	26	26	50

$$\chi^2 = 33.10 \quad p = < .0005$$

By far the largest contribution to this high χ^2 was made by Sharon Hospital where 66% of the patients were receiving medical care and only 34% were in some stage of surgical treatment, as compared with the total figures of 44% medical care and 56% surgical treatment. At Yale-New Haven Hospital the surgical patients represented 68% of the group studied, a figure which is greater than the percentage of surgical patients at any of the other hospitals.

Service to which Patient Admitted	Total pts.	%	Yale pts	%	Wtby pts	%	Sharon pts	%	NM pts	%
Medicine	150	37	32	26	46	32	51	57	21	40
General Surgery	95	23	18	14	42	30	21	24	14	27
Gynecology	49	12	18	14	20	14	5	6	6	12
Orthopedics	40	10	12	10	17	12	6	7	5	10
Ophthalmology	18	4	15	12	3	2	0	0	0	0
Otolaryngology	15	4	10	8	4	3	1	1	0	0
Cardiovasc. Surg.	16	4	11	9	1	1	2	2	2	4
Neurosurgery	9	2	7	6	2	1	0	0	0	0
Urology	15	4	1	1	7	5	3	3	4	8

$$\chi^2 = 90.28 \quad p = < .0005$$

Examination of the chart will show that with the exception of orthopedics, there were few patients in the surgical subspecialties at the two smaller hospitals. The gynecological patients and orthopedic patients were distributed proportionately. However, there were more general medical patients at Sharon and fewer general medical patients at Yale-New Haven than the average figures.

The high percentages of surgical patients at Yale-New Haven Hospital in the last two tables may reflect the fact that many patients are referred to the university center for utilization of facilities which do not exist in smaller hospitals.

In summary the following statements may be made about the populations in the hospitals studied. The patients at Yale-New Haven Hospital were slightly younger, more often Catholic or Negro, and tended to be female more often than the patients in the other three hospitals. In addition, they showed a greater frequency of illnesses requiring surgical treatment, including those illnesses which are more often treated in the surgical subspecialties.

The Waterbury Hospital population differed from the total group only in having a very slightly higher percentage of Catholic patients.

The patients at Sharon Hospital tended to be slightly older, more often male and/or Protestant, and were receiving medical therapy more often than the total population.

The New Milford Hospital patients were seen to be from slightly higher socioeconomic groups (in terms of occupation and education) and were Protestant more commonly than average for the total group of patients studied.

It is to be emphasized that these observations about the patient populations at the several hospitals pertain only to those patients who participated in this study. It is not known whether these observations would hold true for larger groups of patients or for patients admitted at other times of the year in these hospitals. However, we do feel that many of the differ-

ences among the patients in the four hospitals represent differences among the patient populations which they serve. For example, the Negro population of the New Haven area is larger than that for the other three areas.

E. Taylor Manifest Anxiety Scale

The Taylor Manifest Anxiety Scale consists of items drawn from the Minnesota Multiphasic Personality Inventory. It contains fifty statements which have been judged by a panel of clinicians to be indicative of manifest anxiety, according to Norman Cameron's definition of the latter (7). Taylor does not specify the definition which she supplied the panel, but Cameron to whom she refers defines anxiety as "the predominantly covert skeletal and visceral reaction which, for an unhampered and uninhibited person, constitutes the normal preliminary phase of emotional flight, but which for some reason is prevented from going on into its consummatory phase."

In summarizing the observations made during the use of her scale to compare physiological and other behavioral responses Taylor (47) states, "A group of widespread, directly observable overt reactions (e.g., restlessness, tenseness, excessive perspiration, etc.)....accompanied or paralleled by internal emotional responses (primarily controlled by the autonomic nervous system).. is the definition of anxiety which was adopted in the present experiment, the test items being descriptions of the response syndrome clinically termed 'anxiety'."

The form of the Manifest Anxiety Scale used in the present study was the revised version reported by Taylor in 1952 (48). The revision contains simplifications and clarifications of vocabulary and sentence structure but has been found to compare favorably with the original scale in the measurement of anxiety and the selection of more anxious individuals from a population.

F. Hospitalization Anxiety Scale

Initial review of recent literature relevant to the study of hospitalization anxiety failed to reveal a test or scale which could be used in a questionnaire format with a medical or surgical patient. Numerous scales were available for use in the study of general anxiety (5, 39, 48) or for use by physicians and nurses to evaluate patients, but there were no readily-available self-evaluation scales which satisfied the objectives of this project. Development of such a scale was undertaken for this reason.

The first set of questions was derived from modifications of some items on the Taylor Manifest Anxiety Scale (48), suggestions by psychologists and physicians with whom the project was discussed, personal observations of patients by the investigator and theoretical consideration of the nature of the hospitalization experience. Numerous publications were of great assistance in the preparation of this list of questions, particularly those of Janis (23), Barnes (3), Girdwood and Ballinger (14), and Mathew (31).

The initial list of questions underwent several revisions in an attempt to cover the maximum number of potential sources of anxiety in the minimum number of easily-understood statements. The list was reduced to 27 questions for all patients with an additional six questions for surgical patients. This list is contained in the appendix.

Realizing that some sources of anxiety might have been overlooked or inadequately emphasized, it was decided to test

the questionnaire in a pilot study with a small number of anxious patients in one hospital. Arrangements were made with the administration and chiefs of service at the Yale-New Haven Hospital and during May of 1965 the entire questionnaire was administered to 14 patients on the university service of this hospital.

The patients in the pilot study were selected by members of the hospital's house staff as patients who were both anxious and willing to discuss their anxieties freely. Thirteen of the patients pointed out areas of worry and concern that were not included in the questionnaire which they were given. Questions covering these sources of anxiety were added to the scale subsequently.

We observed that patients' actions, incidental comments and reactions to the interview sometimes manifested anxiety which was not evident in response to the specific questions on the scale. Therefore, we decided to include numerical rating scales for these three factors as well for the overall assessment of the patient by the interviewer.

Additional observations made during this pilot study prompted further revisions in the wording, sequence and available responses for several questions. The separate section of questions for surgical patients proved to be impractical to score and did not appear to contribute to the assessment of each patient's anxiety beyond the remainder of the scale. It was eliminated for these reasons. The arrangement of the scale

was extensively revised in order to facilitate scoring and transferring data to computer cards for future data processing. Copies of the pilot study questionnaire and the revised scale are included in the appendix.

The Hospitalization Anxiety Scale was scored in the following manner. For questions 1 - 33 on the HAS there were three possible answers: never, sometimes, often. For questions 34 - 40 there were two choices: yes and no. In each case an answer of "never" or "no" indicated a lack of anxiety about a particular topic, while an answer of "yes," "sometimes," or "often" indicated the presence of anxiety about that topic. In scoring the HAS answers of "no" or "never" were given 0 points, "yes" or "sometimes" were given 1 point, and "often" was given 2 points. The score for any patient was the sum of points for individual questions, with 73 being the maximum possible score.

G. Complete Questionnaire

The questionnaire in its final form as used in this study consists of the following eight sections:

1. Demographic questions
 - a. Hospital
 - b. Unit number or admission number
 - c. Age
 - d. Marital status
 - e. Occupation of head of household
 - f. Education of head of household

Each occupation and each educational level was assigned a numerical value as described in the Two Factor Index of Social Position devised by Hollingshead (18). The occupational scale consisted of the following seven groups: (1) higher executives, proprietors of large concerns, and major professionals; (2) business managers, proprietors of medium-sized businesses, and lesser professionals; (3) administrative personnel, small independent businesses, and minor professionals; (4) clerical and sales workers, technicians, and owners of little businesses; (5) skilled manual employees; (6) machine operators and semi-skilled employees; and (7) unskilled employees.

The educational scale consisted of the following seven groups: (1) graduate professional training, (2) standard college or university graduation, (3)

partial college training, (4) high school graduation, (5) partial high school, (6) junior high school, and (7) less than seven years of school. The numerical values given to the occupation and education of each patient were weighted and combined according to Hollingshead's formula and on this basis the patient was placed into one of five categories of social position, ranging from I (highest) through V (lowest).

- g. Religion
- h. Country of birth
- i. Race
- j. Sex
- k. Number of previous hospitalizations
- l. Reason for present hospitalization (as much as possible it was attempted to determine the patient's working diagnosis at time of interview as listed in the patient's chart or the admission record supplied by the physician)
- m. Nature of therapy at time of interview, (medical, observations for surgery, pre-operative surgical, post-operative surgical)

Two additional statistics were determined for each patient:

- 1. Social status: calculated from weighted numerical scoring of occupation and education as described by Hollingshead (18)

2. On the basis of "reason for present hospitalization" each patient was placed in one of the following categories: medicine, general surgery, gynecology, orthopedics, ophthalmology, otolaryngology, urology, neurosurgery, and cardiovascular surgery.
2. Preliminary questions about hospitalization. With the exception of the first two questions, which were asked of every patient, these questions were reserved mainly for those patients who appeared to be reluctant to talk. Their standardized but informal nature served as a stimulus to verbal expression in reticent patients, while simultaneously offering lighter topics of conversation to patients who gave signs of becoming upset with some of the more serious questions in the questionnaire.
3. Taylor Manifest Anxiety Scale
4. A question concerning feelings of guilt the patient may experience regarding his hospitalization
5. Hospitalization Anxiéty Scale
6. Patient's self-rating scale
7. Patient's projected-rating scale. This scale allowed the patient to indicate whether he felt others (doctors, nurses, other hospital personnel and other patients) would describe him as more or less anxious than he considered himself to be.
8. Examiner's evaluation of the patient based on four aspects of the interview:

- a. Background: comments made by the patient during the interview but not specifically in response to any part of the questionnaire.
- b. Test: patient's reaction to the interview experience
- c. Action: patient's motions and physical behavior (e.g., smoking, gesticulations, sweating)
- d. Overall: examiner's total impression of the patient's anxiety level.

The total amount of information available about each patient and used in determining the results of this study consisted of the eight parts of the questionnaire plus a rating of the patient by his physician and a similar rating by the nurse in charge of the patient's floor. It should be emphasized that while the doctors' and nurses' ratings of the patients were not physically part of the questionnaire, they are integral parts of the assessment of each patient and should not be considered merely ancillary to the test vehicle in any future studies.

All ratings (patient-self, patient-projected, examiner, doctor, and nurse) were based on the following five-point scale:

5	very anxious
4	
3	moderately anxious
2	
1	very much at ease

(The 0 score listed on the questionnaire with background, test, action, and overall ratings was not used.) The terms "very

"anxious" and "very much at ease" were used to define the limits of the scale. The term "moderately anxious" was felt to describe the mid-point on the scale. No qualifying terms were used with scores 2 and 4 in order that all degrees of anxiety between "moderately anxious" and "very anxious" could be given a single score and all degrees of anxiety between "very much at ease" and "moderately anxious" could also be given a single score.

H. Scoring of Questionnaire

At the conclusion of the study, patients in the four hospitals were compared on the following bases:

1. Hospitalization Anxiety Scale scores
2. Taylor Manifest Anxiety Scale scores
3. Patients' self-ratings
4. Examiner's ratings
5. Doctors' ratings
6. Nurses' ratings
7. Guilt responses
8. A weighted scale in which all of the above were included.

For purposes of convenience in handling the large number of scores, the following groupings were made:

1. The doctors', nurses', examiner's, and patients' ratings which had been made on a five-point scale were reduced to a three-point scale by combining scores of 1 and 2 into a "low anxiety" category and combining scores of 4 and 5 into a "high anxiety" category. Therefore, for these four scales there were three categories of anxiety: low, moderate, and high.

2. The mean score on the Hospitalization Anxiety Scale was determined to be 8. The "moderate anxiety" category was defined as any score which fell within a range of four points above or below the mean (i.e., scores of 4 to 12). All scores below this range were classified as "low anxiety" and all scores above this range were classified as "high anxiety."

3. The mean score on the Taylor Manifest Anxiety Scale was determined to be 12. The "moderate anxiety" category was defined as any score which fell within a range of 6 points above or below this mean (i.e., scores of 6 to 18). All scores below this range were classified as "low anxiety" and all scores above this range were classified as "high anxiety."

4. The responses to the question about guilt fell into three groups: never, sometimes, and often. These were given scores of 1,2, and 3, respectively.

5. Weighted scale: In order to use the maximum amount of information available about each patient, a weighted scale was devised. The following are the factors included in this scale, along with the relative weight given each factor:

Factor	Weight	Max. Score	Min. Score
HAS score (1,2,3)	6	18	6
Guilt response (1,2,3)	2	6	2
Patient's self rating (1,2,3)	3	9	3
Background comments (1,2,3)	1	3	1
Response to interview (1,2,3)	1	3	1
Actions during interview (1,2,3)	1	3	1
Examiner's rating (1,2,3)	3	9	3
Doctor's rating (1,2,3)	3	9	3
Nurse's rating (1,2,3)	3	<u>9</u>	<u>3</u>
		69	23

The background, test response, and action scores were reduced from 5-point scales to 3-point scales in the same manner described above for the examiner's, doctor's, and nurse's ratings.

It will be noted that the evaluations supplied by the doctor, nurse, interviewer, and patient have been given equal weight. The three scores based on part of the interview which would not necessarily be reflected in the HAS score (i.e. background, test reaction, and actions) have been given a cumulative weight equal to any one of the other individual ratings. The guilt response has been given a slightly lower weighting while the Hospitalization Anxiety Scale has been given a weighting equal to any two of the other ratings.

Both the total scores and the responses to individual questions were transferred to IBM 5081 cards and verified by key-punch operators at the Yale Computer Center. Equipment used for data processing included the IBM 7040/7094 Direct Couple System Computers.

V. Results

A. Comparison of Hospitals according to Various Instruments

Patients from the four hospitals were compared according to the following test instruments: Hospitalization Anxiety Scale, Taylor Manifest Anxiety Scale, patients' self-ratings, examiner's ratings, doctors' ratings, nurses' ratings, guilt response and the weighted scale. The results of each of these comparisons are given in this section. Figures represent the percentage of patients in each anxiety category.

<u>Hospitalization Anxiety Scale</u>	<u>Total</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>
High	21	38	21	7	4
Moderate	46	44	51	44	36
Low	34	18	28	49	60

$$\chi^2 = 62.77 \quad p < .0005$$

Study of the distribution of Hospitalization Anxiety Scale scores in the four hospitals revealed some striking differences. The patients at the Yale-New Haven Hospital were found to be markedly more anxious than those at any other hospital. Almost twice as many fell into the "high anxiety" group as would have been expected with random distribution of scores.

The patients at the Waterbury Hospital distributed almost exactly according to the total pattern. The percentage of patients in the "low anxiety" category was only slightly lower than observed in the total population.

Constitutive function of the β -adrenergic receptor

and several mechanisms will have to be considered. First, activation of the β -adrenergic receptor may increase basal adenylyl cyclase activity by a mechanism involving protein phosphorylation. This hypothesis is supported by the finding that basal adenylyl cyclase activity can be increased by the addition of cyclic nucleotide-gated channels, which produce cAMP by opening off-state channels, increasing rates of protein kinase activation (Kondo et al., 1992). Second, the β -adrenergic receptor may increase basal adenylyl cyclase activity by activating a GTP-binding protein, which increases basal adenylyl cyclase activity by activating adenylyl cyclase (Kondo et al., 1992).



Figure 1 shows that the beta-adrenergic receptor antagonist propranolol decreases basal adenylyl cyclase activity. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent.

Figure 2 shows that the beta-adrenergic receptor antagonist propranolol decreases basal adenylyl cyclase activity. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent.

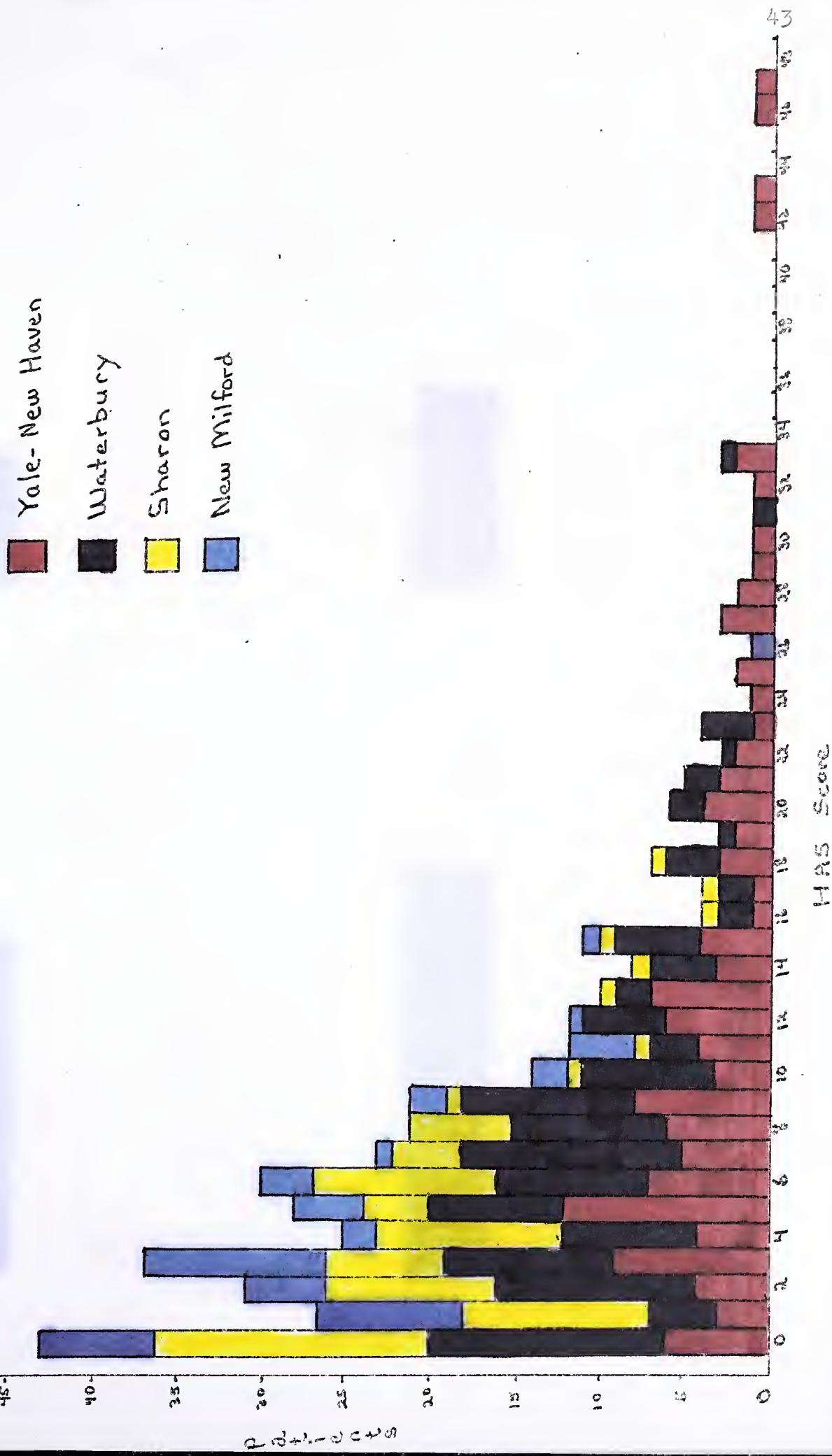
Figure 3 shows that the beta-adrenergic receptor antagonist propranolol decreases basal adenylyl cyclase activity. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent. The effect of propranolol on basal adenylyl cyclase activity is concentration-dependent.

Patients at Sharon Hospital were significantly less anxious than patients at either of the two large hospitals. There were only one-third as many patients in the "high anxiety" group as there were with all hospitals combined. The "low anxiety" group showed approximately a 50% increase over the figure for all patients.

The low level of anxiety was even more striking at the New Milford Hospital than at Sharon. The chart shows that only 4% of the patients at this hospital were in the "high anxiety" category as opposed to the average figure of 21%. Also, the "low anxiety" group comprised 60% of the patients interviewed, rather than the 34% that would have been expected with random distribution.

The graphs on the following two pages illustrate the distribution of HAS scores among patients in the four hospitals. The first graph shows the distribution of all scores with each hospital represented by a different color. The second chart shows the distribution of scores within each hospital with scores grouped into low, moderate, and high anxiety groups.

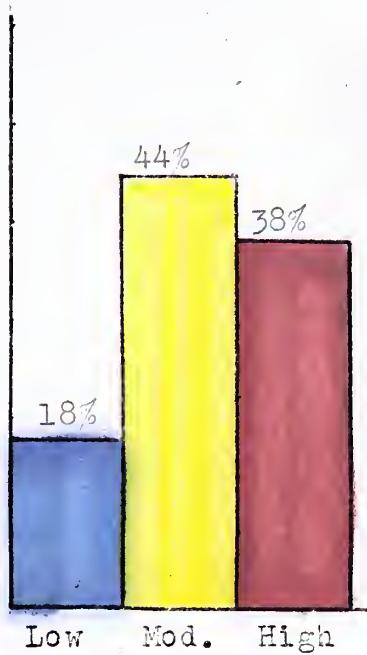
Distribution of HAS Scores in Four Hospitals



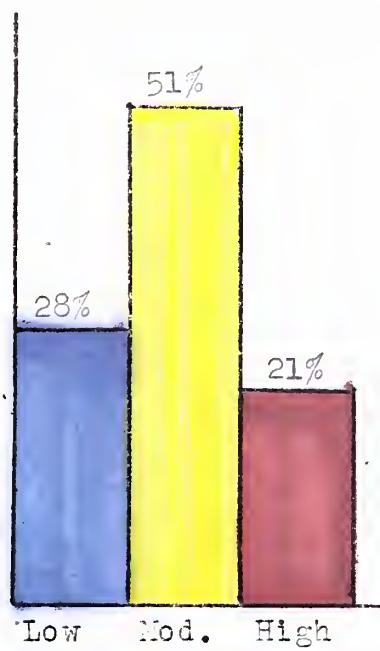


DISTRIBUTION OF HAS SCORES WITHIN EACH HOSPITAL

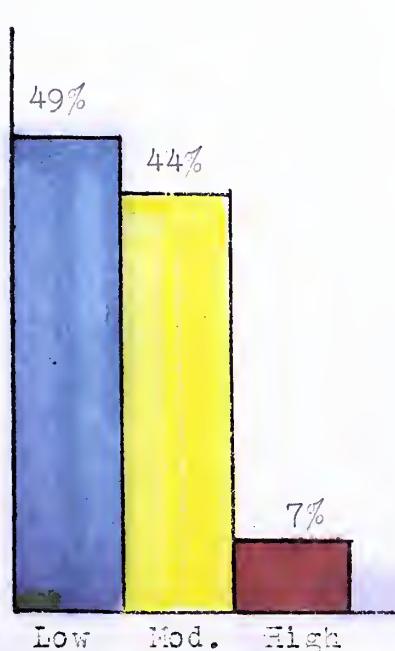
Yale-New Haven



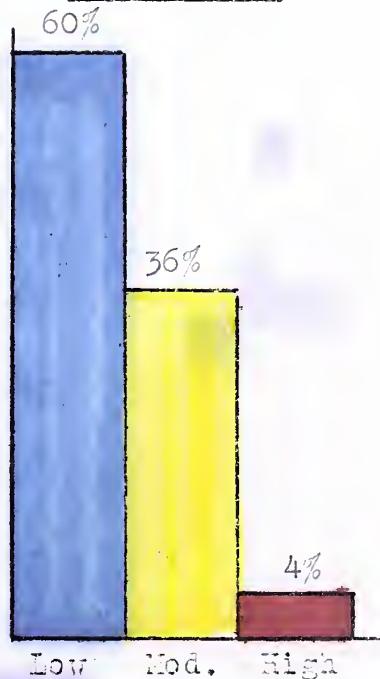
Waterbury



Sharon



New Milford





	<u>Total</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>
<u>Taylor Manifest Anxiety Scale</u>					
High	22	28	24	18	8
Moderate	50	48	50	48	54
Low	29	24	26	34	38

$$\chi^2 = 12.06 \quad p = .05 < .10$$

The Taylor Manifest Anxiety Scale also demonstrated different levels of anxiety among the patients in the four hospitals, with Yale-New Haven showing increased anxiety and Sharon and New Milford showing decreased levels of anxiety. The changes were much less marked with this scale than they were with the Hospitalization Anxiety Scale (χ^2 of 12.06 for TMAS versus χ^2 of 62.77 for HAS).

The hospital variations on the TMAS may indicate either that:

- a. The patients at the various hospitals had different levels of predisposition to anxiety during hospitalization (assuming that the TMAS indicated a level of anxiety not specifically related to the hospital experience), or
- b. Patients who experienced higher levels of hospitalization anxiety were more prone to express general anxiety than those who had fewer worries while in the hospital (assuming that some aspect of hospitalization caused increased communication of anxiety in relation to both the hospital experience and the patient's general surroundings).

In order to determine which, if either, of these two suggestions was valid, it would have been necessary to administer the TMAS

before hospitalization. This was not done during this study.

In any event, it is readily apparent that whatever hospital-associated differences in anxiety were demonstrated by the TMAS, these differences were much more clearly shown by the HAS, a scale designed specifically to study the anxiety encountered during hospitalization.

Patient Self-Rating	Total	Yale	Wtby	Sharon	NM
High	6	6	10	4	0
Moderate	25	31	26	18	21
Low	69	64	64	78	79

$$\chi^2 = 14.18 \quad p = .02 < .05$$

Patient Self-Rating: The patients generally rated themselves as less anxious than their HAS scores indicated. There were also some differences among the hospitals but they were less pronounced than the differences brought out by the HAS. Approximately 80% of the New Milford and Sharon patients felt that they would fall into a "low anxiety" category as opposed to approximately 65% in the same category at Waterbury and Yale-New Haven.

- * -

Examiner Rating	Total	Yale	Wtby	Sharon	NM
High	16	18	17	12	15
Moderate	32	40	33	24	25
Low	52	42	50	64	60

$$\chi^2 = 11.85 \quad p = .05 < .10$$

Examiner Rating: The examiner, who administered the questionnaire to each patient, tended to find patients in the smaller hospitals to be less anxious than those in the larger

hospitals, but again the differences were far less striking than those demonstrated with the HAS.

<u>Doctor Rating</u>	<u>Total</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>
High	22	20	24	22	21
Moderate	38	38	37	37	42
Low	40	43	38	40	36

$$\chi^2 = 1.49 \quad p = .95 < .98$$

Doctor Rating: The very low χ^2 value indicates that the minimal differences in doctors' ratings from hospital to hospital are most probably ascribable to chance.

- * -

<u>Nurse Rating</u>	<u>Total</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>
High	22	27	22	16	17
Moderate	36	37	45	17	42
Low	42	36	34	67	40

$$\chi^2 = 33.74 \quad p < .0005$$

Nurse Rating: Nurses at Yale-New Haven tended to rate their patients as slightly more anxious and those at Sharon tended to rate their patients as much less anxious than the average distribution of ratings. Subsequent comparison of nurse ratings with HAS scores, however, shows that there is a rather poor correlation between these two ratings (see below).

In general, it would appear that in any given hospital the doctors, nurses, and patients base their comparisons on their experiences with patients in that hospital or community. The examiner, too, seems to have adopted the standards of anxiety for each hospital. The result is that the ratings supplied by these four sources show less inter-hospital variation than the ratings supplied by a test object which is independent of these

influences, namely the Hospitalization Anxiety Scale.

<u>Guilt Response</u>	<u>Total</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>
Often	12	12	18	8	0
Sometimes	11	9	11	11	14
Never	77	79	70	81	86

$$\chi^2 = 14.99 \quad p = .02 < .05$$

The four hospitals did not vary greatly in the percentage of patients showing guilt by responding affirmatively to the statement, "I think that if I had taken better care of myself I wouldn't be here in the hospital." The largest percentage of positive replies is seen at Waterbury (29%), followed by Yale-New Haven (21%), Sharon (19%), and New Milford (14%). Patients in the large hospitals manifested guilt feelings more frequently than those in the small hospitals in this study, but the very small difference between the percentages for Yale-New Haven and Sharon precludes any further generalization. It is quite probable that feelings of guilt are more closely associated with other factors (sex, age, type of illness, etc.) than with the hospital involved. Nevertheless, the high overall percentage (23%) of patients acknowledging this statement as true of their present hospitalization strongly suggests that this should be a point of concern to those engaged in the care of these patients.

- * -

<u>Weighted Scale</u>	<u>Total</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>
High {48 - 69}	26	35	28	14	19
Mod. {33 - 47}	51	53	52	48	48
Low {23 - 32}	23	12	20	37	33

$$\chi^2 = 25.81 \quad p = < .0005$$

The figures presented for the weighted scale are quite similar to what one would expect on the basis of the individual ratings which compose this scale. The patients in the large hospitals were significantly more anxious than those in the small hospitals studied. The fact that the χ^2 was between the value for the HAS and the values for the individual ratings reflects the previous observation that the marked differences among the hospitals pointed out by the HAS are less strikingly demonstrated by the ratings supplied by the doctors, nurses, patients and examiner.

B. Comparison of Sub-groups of Patients

In order to determine the extent to which other parameters (e.g. age, sex, religion) correlated with scores on the Hospitalization Anxiety Scale, the "high," "moderate" and "low" anxiety groups were divided according to the following demographic categories: age, marital status, occupation, education, social status, religion, country of birth, race, sex, number of previous hospitalizations, type of therapy and service to which patient was admitted. An analysis of each group along with the pertinent chart follows (all figures are percentages).

<u>Age</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
21 - 29	4	12	24	12
30 - 39	8	12	24	13
40 - 49	11	15	19	14
50 - 59	23	22	16	21
60 - 69	24	18	11	19
70 -	30	22	7	21

$$\chi^2 = 47.79 \quad p < .0005$$

These figures show that with increasing age the number of patients in the low anxiety group increases and the number of patients in the high anxiety group decreases. The age of 50 would appear to be the point beyond which hospitalization anxiety decreases according to figures in this study.

<u>Marital Status</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
Single	12	9	13	11
Married, Remarried	66	64	62	64
Divorced, Separated	7	9	13	9
Widowed	15	18	12	16

$$\chi^2 = 5.57 \quad p = .30 \quad < .50$$

There appears to be little, if any, correlation between marital status and hospitalization anxiety score. There is a slight tendency for the divorced and separated patients to fall into the higher anxiety categories but the low χ^2 value indicates that this may simply represent a chance distribution.

<u>Occupation</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
1-2 (Upper)	18	17	18	17
3-5 (Middle)	49	53	51	51
6-7 (Lower)	33	30	32	31
$\chi^2 = 0.53$		$p = .95 < .98$		

There was no correlation between occupational level and hospitalization anxiety scores in this study.

<u>Education</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
1-3 { 12 years}	20	22	27	22
4-5 { 10-12 years}	46	50	48	48
6-7 { 10 years}	34	29	25	30
$\chi^2 = 2.82$		$p = .50 < .70$		

While it would appear that the patients who had education levels beyond high school tended to fall into the higher anxiety groups and that those who had fewer than 10 years of school tended to fall into the lower anxiety groups, the p value shows that there is a 50-70% probability that this distribution occurred by chance. We would conclude, therefore, that there is little, if any, association between educational level and HAS score.

<u>Social Status</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
I (Upper)	6	4	5	5
II	10	9	9	9
III	12	16	15	15
IV	44	46	39	44
V (Lower)	28	25	32	28

$$\chi^2 = 3.14 \quad p = .90 < .95$$

In this study there was no general correlation between social status and HAS score.

<u>Religion</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
Catholic	36	46	53	44
Protestant	61	51	41	52
Jewish	4	3	6	4

$$\chi^2 = 8.89 \quad p = .05 < .10$$

These figures suggest that there was a higher level of anxiety among Catholic patients than among Protestant patients. The Catholic patients represented 44% of the total population but 53% of the high anxiety group. The Protestants, on the other hand, represented 52% of the total population but 61% of the low anxiety group. There were too few Jewish patients to draw any conclusions about the level of hospitalization anxiety in this group.

<u>Country of Birth</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
United States	84	87	94	88
Other	16	13	6	12

$$\chi^2 = 4.55 \quad p = .10 < .20$$

There was a slight tendency for immigrant patients to fall into the lower anxiety group, but the p value indicates a 10-20% probability that this finding represents chance distribution.

<u>Race</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
White	98	92	89	93
Negro	2	8	11	7

$$\chi^2 = 7.14 \quad p = .02 < .05$$

The Negro patients tended to fall into higher anxiety levels than the white patients. Since only 27 (7%) of the patients were Negro, it would be difficult to draw firm conclusions about this group, however.

<u>Sex</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
Male	56	41	32	44
Female	44	59	68	56

$$\chi^2 = 12.99 \quad p = .001 < .005$$

This chart shows a significant male preponderance in the low anxiety group and female preponderance in the high anxiety group.

<u>Number of Previous Hospitalizations</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
0	8	5	4	6
1-3	40	44	31	40
4-6	34	27	25	29
7+	18	24	41	26

$$\chi^2 = 17.90 \quad p = .005 < .01$$

The major contribution to the significant χ^2 value was made by the group of patients who had been hospitalized seven or more times. While only 26% of the total population had been hospitalized this frequently, 41% of those patients who had high HAS scores fell into this "frequently hospitalized" group.

<u>Type of Therapy</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
Medical	44	43	44	44
Surgical/Observation	2	5	11	5
Surgical/Pre-op	8	5	7	6
Surgical/Post-op	46	47	39	45

$$\chi^2 = 10.79 \quad p = .05 < .10$$

The only significant aberration from the random distribution of anxiety scores occurred in the surgical/observation group. Among these patients a generally increased level of anxiety was noted. However, there were only 21 patients in this group and no definite conclusions about such a group can be drawn.

<u>Service to which Patient Admitted</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>	<u>Total</u>
Medicine	36	36	41	37
General Surgery	28	25	13	23
Gynecology	10	10	19	12
Orthopedics	6	11	14	10
Ophthalmology	6	5	0	4
Otolaryngology	4	4	4	4
Cardiovascular	3	4	5	4
Neurosurgery	2	2	4	2
Urology	6	3	1	4

$$\chi^2 = 23.49$$

$$p = .10 < .20$$

Since each of the last five specialties had fewer than 20 patients, conclusions will be limited to the medical, general, surgical, gynecological, and orthopedic patients. (In addition, the chart shows very little variation from the predicted distribution among the surgical subspecialties.) The medical patients distributed very close to the expected figures. The general surgical patients tended to show somewhat lower levels of anxiety. On the other hand, the gynecological and orthopedic patients were found to represent a disproportionately large percentage of the high anxiety group (33% observed versus 22% expected).

In summary, the significant demographic factors were age, religion, race and sex. To a lesser extent, the number of previous hospitalizations and the service to which the patient was admitted

appeared to correlate with anxiety levels. Marital status, occupational level, educational level, social status, country of birth, and stage of therapy did not show general correlation with anxiety levels.

It is to be emphasized that these observations pertain to large groups of patients and not to individual patients. We cannot deny that any one or more of these parameters may play an overwhelming role in determining the level of anxiety in any single patient. For example, one patient's anxiety may be entirely attributable to his feelings of inferiority from not having completed high school, while another patient may feel very much ill at ease due to his recent divorce. Nevertheless, the general associations for the total patient population would seem to be limited to the factors listed above.

C. Comparison of Rating Instruments

In order to determine the extent to which the ratings supplied by the patient, doctor, nurse, examiner, and Taylor Manifest Anxiety Scale correlated with the rating determined by the Hospitalization Anxiety Scale the following chart was prepared. Each vertical column represents a classification on the HAS (e.g. low, moderate, or high anxiety). The figures represent the percent of the total scores in any given column which correspond to the category designated by the row. For example, in the first part of the chart, of all patients being classified in the "high anxiety" group on the HAS, 61% were rated "high" by the TMAS, 36% were rated "moderate" and 2% were rated "low" in anxiety by this scale.

The two right-hand columns are included to give an approximation of the extent of correlation between any two scales. For example, correlation is indicated by finding what percentage of patients rated "high" on the HAS are also rated "high" on the TMAS, what percentage of patients rated "moderate" by the HAS are also rated "moderate" on the TMAS, etc. If there is complete correlation the sum of the "high/high", "moderate/moderate," and "low/low" figures will be 300. If there is no correlation, the sum of the "high/low" and the "low/high" groups will be 200. In the first table we notice that the sum is 179 ($61 + 61 + 57$) for correlation and 4 ($2 + 2$) for lack of correlation, indicating a fair amount of correlation between the HAS and the TMAS.

Correlation of Individual Ratings with Hospitalization Anxiety Scores:

(All figures are percentages, taking each HAS column and expressing the rating given by the other method as a percentage of this)

HOSPITALIZATION ANXIETY SCALE

<u>Taylor Manifest Anxiety Scale</u>	<u>High</u>	<u>Moderate</u>	<u>Low</u>	<u>Corr.</u>	<u>No Corr.</u>
High	61	19	2		
Moderate	36	61	42		
Low	2	20	57	179	4
<u>Patient Self-Rating</u>					
High	19	5	0		
Moderate	53	22	12		
Low	28	73	88	129	28
<u>Patient Projected Rating</u>					
High	22	3	0		
Moderate	33	17	10		
Low	45	81	90	129	45
<u>Examiner Rating</u>					
High	44	14	2		
Moderate	52	37	12		
Low	5	49	85	166	7
<u>Doctor Rating</u>					
High	33	24	12		
Moderate	36	37	40		
Low	31	38	48	118	43
<u>Nurse Rating</u>					
High	34	23	12		
Moderate	42	35	34		
Low	24	42	55	124	36

A glance at the charts and particularly at the correlation and lack of correlation columns shows that while the scores obtained from the TMAS and the examiner agreed reasonably well with the HAS scores, the ratings supplied by the doctor, nurse and patient showed a fair amount of divergence from the HAS scores.

Examination of the actual numbers (rather than the percentages shown on these charts) showed that the ability of the doctors and nurses to select those patients who have high HAS scores is no better than chance. The doctors placed 90 patients in the high anxiety group but only 28 (33%) of these fell in the "high anxiety" category on the HAS. Also, of the 85 patients who were in the "high" group on the HAS, only 26 (31%) were rated by their doctors as "high anxiety." The nurses succeeded in picking 29 (34%) of the 85 "high anxiety (HAS)" patients but evaluated 20 (24%) of these patients as "low anxiety."

Some of this disparity between staff rating and HAS scores may be explained by examining the difference between the ratings the patients gave themselves and the way they thought others would rate them. We see that while 28% of the "high anxiety" group rated themselves as "low," 45% of the "high" stated that they thought they would appear to others to be in the "low anxiety group."

D. Significance of Patients' Projected Ratings

Each patient gave a self-rating of his anxiety level and also gave a projected rating, i.e., he indicated the anxiety level which he thought others would attribute to him. Eighty percent of the patients gave the same score for both ratings. Seven percent felt that others would rate them as more anxious than they rated themselves, and thirteen percent felt that others would rate them as less anxious.

The self-ratings and the projected ratings given by patients were compared with the ratings supplied by the physicians, the nurses and the interviewer. It was noted that the latter three ratings did not correlate any more highly with the patients' self-ratings than with their projected ratings. This finding suggests that the belief of some patients that they project themselves as more anxious or less anxious than they are is probably not true.

The disparity of opinions about patients who rated themselves as "very anxious" was striking. There were 28 patients in this group. Of these patients, 65% were rated "very anxious" by the interviewer, 39% by the nurses, and 36% by the physicians. The lack of agreement about the anxiety level of these patients suggests either that the patients were over-rating their anxiety level or that the interviewer, nurses, and physicians were not appreciating the anxiety in these patients.

E. Comparison of Matched Sub-groups in the Four Hospitals

It was pointed out in Section IVB that the patient populations at the four hospitals studied differed from each other to varying extents. In order to determine whether the differences in anxiety levels at the hospitals could be attributed largely to these demographic variations, a subpopulation was prepared with the following groups of patients eliminated:

1. All Negro patients.
2. All patients in surgical subspecialties
(ophthalmology, otolaryngology, cardiovascular surgery, neurosurgery and urology).

A total of 326 patients remained. These patients were then subdivided on the basis of age, religion, sex, and therapy (medical vs. surgical). The following hospital-associated variations were noted (each figure represents the percentage of patients at a given hospital who fall into the HAS category specified):

<u>Before subdivision</u>		<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
<u>Total: 326 patients</u>						
<u>HAS</u>						
High		45	24	7	4	22
Moderate		42	50	42	38	44
Low		14	26	51	58	34

$$\chi^2 = 59.80 \quad p = < .0005$$

These figures compare fairly closely with the distribution of patients before the Negroes and surgical subspecialty patients were eliminated. The differences among the hospitals remain striking.

1. With Control for Age

Age: 21 - 39 (77 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	65	44	27	0	40
Moderate	35	35	40	69	42
Low	0	22	33	31	18

$$\chi^2 = 20.93 \quad p = .001 < .005$$

Age: 40 - 59 (121 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	46	24	4	7	23
Moderate	43	53	44	20	45
Low	11	24	52	73	32

$$\chi^2 = 30.69 \quad p = < .0005$$

Age: 60 and above (128 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	15	15	2	6	9
Moderate	50	54	42	29	46
Low	35	30	56	65	44

$$\chi^2 = 12.19 \quad p = .05 < .10$$

The above tables show that the Yale-New Haven patients were more anxious than patients in the other hospitals in all three age groups, while the Sharon and New Milford patients were less anxious than the other patients in each of the same groups. The differences were less pronounced in the patients who are 60 years of age or older, but there was still a strong suggestion that a hospital-associated variation in anxiety exists in this group.

2. With Control for Religion

Religion: Catholic (142 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	47	29	8	0	29
Moderate	44	44	50	38	45
Low	9	27	42	62	26

$$\chi^2 = 23.36 \quad p = .0005 < .001$$

Religion: Protestant (166 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	39	18	7	6	15
Moderate	35	58	39	38	45
Low	26	24	54	56	40

$$\chi^2 = 26.07 \quad p = < .0005$$

The interhospital differences remained when religious variation was eliminated. It did not appear that the preponderance of one or another religious group in any hospital was the cause of any altered level of anxiety in that hospital. Because of the small number of Jewish patients remaining after subdivision (14), no interhospital comparisons were made for this group.

3. With Control for Sex

Sex: Male (135 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	36	21	10	10	18
Moderate	41	51	37	21	41
Low	23	28	54	68	41

$$\chi^2 = 18.64 \quad p = .001 < .005$$

Sex: Female (187 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	49	28	5	0	25
Moderate	41	51	48	52	48
Low	10	22	48	48	28

$$\chi^2 = 42.61 \quad p = < .0001$$

While the interhospital variations among the female patients were greater than those among the male patients, the hospital-associated anxiety levels among the male patients were still quite significant. The pattern for both groups was the same as that described for the total patient population, i.e., anxiety levels were highest at Yale-New Haven, followed in order of decreasing anxiety by Waterbury, Sharon and New Milford.

4. With Control for Type of Therapy

Therapy: Medical (154 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	57	34	7	10	22
Moderate	36	59	41	29	44
Low	7	16	52	62	34
$\chi^2 = 47.71$					$p < .0005$

Therapy: Surgical (168 patients)

<u>HAS</u>	<u>Yale</u>	<u>Wtby</u>	<u>Sharon</u>	<u>NM</u>	<u>Total</u>
High	38	25	7	0	22
Moderate	44	45	44	48	45
Low	17	30	48	52	33
$\chi^2 = 20.86$					$p = .001 < .005$

Both medical and surgical patients showed hospital-associated variations in anxiety levels. In both groups the Yale-New Haven patients were more anxious than the total group and the Sharon and New Milford patients were less anxious than the total group.

The preceding tables indicate that the differences in anxiety levels among the four hospitals could not simply be ascribed to variations in age, religion, sex, or type of therapy of the patients in these hospitals. The differences persisted when we controlled for each variable. Unfortunately the number of patients was not sufficiently large to permit controlling for all variables simultaneously. This could better be attempted in a prospective study in which the criteria for patient selection were more rigidly defined.

F. Association of Illness or Diagnosis with Hospitalization

Anxiety

The role of possibly one of the more important determinants of hospitalization anxiety, i.e., the illness requiring treatment in a hospital, was one of the more difficult variables to assess. In order to evaluate the extent to which anxiety was caused by or associated with the illness one would have to know not only the diagnosis for each patient but, more importantly, his understanding of his illness. No attempt to determine the latter was made in this study.

However, the working diagnosis (or main symptoms in cases where no diagnosis was listed) was recorded for each patient. It is quite true that this diagnosis often does not correspond with the patient's conception of the nature and import of his illness, but examination of these diagnoses enables us to make a few general statements about the role of illness in the determination of hospitalization anxiety. The diagnosis of patients who scored 0 to 1 on the HAS and those of those who scored 18 or above on the HAS are listed on the following two pages.

Working Diagnoses in Patients Scoring 0 - 1 on HAS

Yale-New Haven Hospital

Recurrent cystocele
 Tumor on back
 Post-nasal drip
 Ankle ulceration, bone graft
 Femoral-popliteal vein graft
 Inactive rheumatic heart disease,
 pre-op open heart surgery
 Compression of lumbar nerve root
 Cataract
 Cataract

Sharon Hospital

Chronic rheumatic heart disease,
 congestive heart failure
 Chest pain, ? pneumonia
 Peptic ulcer
 Rheumatic heart disease,
 emphysema, asthma
 Recurrent urinary infection
 Compression fracture (vertebra)
 Epistaxis (one week)
 Urticaria, hypertension of
 ? etiology
 Inguinal hernia
 Possible herpes zoster
 Vaginal hysterectomy
 Diabetes, myxedema
 Poss. CVA, Poss. orthostatic
 hypotension
 Pneumonia, emphysema
 Choledochoduodenostomy
 Leg ulcer
 Possible gastrointestinal
 malignancy
 Hypertension of ? etiology
 Procentia, incontinence
 Leg weakness, possible CVA
 Skin graft to hand
 Duodenal diverticulum
 Cirrhosis, ? pancreatitis
 Inhalation tracheobronchitis
 Rheumatoid arthritis, weight
 loss
 Possible adenocarcinoma of
 sigmoid
 Recurrent inguinal hernia

Waterbury Hospital

Bronchial asthma
 Tendon repair
 Acute abdomen
 Cholecystitis
 Possible carcinoma of cervix
 Cataract
 Twisted ovarian cyst
 Pneumonitis
 Acute cholecystitis
 Pilonidal sinus
 Peptic ulcer
 Hepatomegaly of?etiology
 Cholecystitis
 Congestive heart failure,
 diabetes mellitus, leg ulcers
 Cataract
 Prostatism
 Nasal obstruction
 Threatened abortion
 Diabetes, cellulitis

New Milford Hospital

Headaches, hypertension
 Carcinoma of breast
 Chest pain, sweats, dyspnea
 Rectal bleeding
 Pilonidal sinus
 Bilateral varicose veins
 Appendicitis
 Chronic asthma
 Angina pectoris
 Abdominal hysterectomy for
 Class V Pap smear
 Myelogenous leukemia
 Removal hip pin, staphylococcal
 abscess
 Prolapsed uterus
 Obesity, hypertension, dia-
 betes, chest pain

Working Diagnoses in Patients Scoring 18 or above on HAS

Yale-New Haven Hospital

Hypertension of ? etiology
 Cellulitis
 Chronic pelvic inflammatory disease
 Deviated nasal septum
 Myasthenia gravis
 Metastatic carcinoma
 Carcinoma of cervix
 Internal carotid ligation for epistaxis
 Mitral valvulotomy
 Metastatic carcinoma
 Sphenoid carcinoma
 Breast mass
 Urinary tract infection
 Prolapsed intervertebral disk
 Infected draining sinuses
 Toe amputation for onychogryphosis
 Jaundice of ? etiology
 Hydrosalpingectomy, multiparity
 Epilepsy, abdominal pain
 Metastatic carcinoma
 Metastatic carcinoma
 Possible sub-dural hematoma
 Thrombophlebitis
 Stress incontinence, sterilization
 Possible brain atrophy
 Abdominal pain, ? tubal pregnancy
 Rhizotomy of C5
 Lymphoma
 Psoriatic arthritis
 Chronic pancreatitis
 Breast carcinoma with metastases to brain

Waterbury Hospital

Pyelonephritis, diabetes
 Change of cast
 Fracture and dislocation
 Prolapsed lumbar disk
 Herniated disk
 Pelvic abscess
 Pneumonia
 Pedal edema
 Uterine fibromyomata
 Abscess of abdominal wound
 Bronchitis
 Arteriosclerotic heart disease with angina
 Appendicitis
 Dyspareunia

Sharon Hospital

Chest pain, possible fractured rib

New Milford Hospital

(One patient, diagnosis not recorded)

Many diagnoses or symptoms are found on both the low and the high anxiety charts. Among the diagnoses which occur on both charts are the following: hypertension, epistaxis, heart disease requiring open-heart surgery, appendicitis, diabetes mellitus, multiple gynecological problems, arteriosclerotic vascular disease, urinary tract infection, pneumonia and various malignancies.

It would appear that patients with malignant disease fall into a high anxiety category more often than into a low anxiety category. However, in this study it is not known which cancer patients knew their diagnoses and which did not. With non-cancer patients there are no clear-cut distinctions between the diseases which are associated with increased anxiety levels and those associated with decreased anxiety levels.

One who would assert that he could predict the level of anxiety by knowing the patient's diagnosis should be prepared to explain the finding of high anxiety in patients with pedal edema, cast change, urinary tract infection, thrombophlebitis, uterine fibroids and cellulitis and the simultaneous finding of low anxiety in patients with myelogenous leukemia, peptic ulcer, chronic rheumatic heart disease and congestive failure, carcinoma of the breast, and heart disease requiring open heart surgery. It is clear that any preconceived notions about the amount of anxiety associated with any given disease must be reconsidered with regard to each patient with whom one is confronted.

G. Effect of Knowing Hospital Personnel

One purpose of this study was to test the hypothesis that patients in small town hospitals are more likely to know hospital personnel in advance of hospitalization and are consequently less anxious while in the hospital. In order to evaluate this hypothesis, each patient was asked the following question: "Did you know any of the nurses, aides, or other employees of the hospital before, either from previous hospitalization or from social contact?". The answers given by patients at each hospital were as follows (in percentages):

	<u>Yale-New Haven</u>	<u>Waterbury</u>	<u>Sharon</u>	<u>New Milford</u>
Yes	27	52	39	42
No	73	48	61	58

This chart shows that a higher percentage of patients in Waterbury Hospital knew hospital personnel in advance of hospitalization than in either of the two smaller hospitals. The low percentage for Yale-New Haven Hospital is probably attributable to the fact that numerous patients at that hospital are referred there from beyond the New Haven area and are less likely to have met hospital employees before.

In order to determine whether previous acquaintance with hospital personnel was likely to have made patients less anxious the following table was prepared. In this table the HAS scores are divided according to hospital. The numbers in parentheses are the percentages for patients who did not know personnel before admission. The other numbers are the percentages for patients who did know personnel before admission.

<u>HAS</u>	<u>Yale-New Haven</u>	<u>Waterbury</u>	<u>Sharon</u>	<u>New Milford</u>	<u>Total</u>
High	43 {35}	17 {25}	12 {4}	0 {7}	19 {22}
Moderate	51 {43}	51 {49}	38 {47}	32 {40}	46 {45}
Low	6 {22}	32 {25}	50 {49}	68 {53}	35 {33}

Examination of the total column shows that there was very little difference between the anxiety levels in patients who knew hospital personnel and the anxiety levels in those who did not. In the individual hospitals, however, some differences are noted. Patients at Yale-New Haven with previous acquaintance with staff members were more anxious than those without this acquaintance. The opposite was true at Waterbury and New Milford. The differences were less clear-cut at Sharon.

In attempting to interpret these figures it is important to point out that patients may know members of the hospital staff for different reasons, (e.g., social contact, previous hospitalization). The patient who knows hospital personnel as a result of previous hospitalizations for serious illness and who is anxious for whatever reason will naturally fall into a different part of the scale from the patient who has met hospital personnel socially and who is now hospitalized and is experiencing no anxiety. Therefore, it is conceivable that the patients at Yale-New Haven knew hospital staff members from previous hospitalizations, while the patients at Waterbury and New Milford may have met the hospital personnel under less **stressful** conditions.

H. Study of Nurses

Among the sources of hospitalization anxiety are the daily interactions between patients and nurses. It was not a specific purpose of this study to examine or to evaluate these interactions and the anxiety which may result from them. However, the Taylor Manifest Anxiety Scale was given to each nurse on a selected mid-week day shift at each hospital.

The scale was accompanied by a brief questionnaire which is included in the appendix. Only two nurses refused or failed to participate (one at Waterbury Hospital and one at Yale-New Haven Hospital). No reasons were given for their lack of participation. The scores were grouped into high, moderate, and low anxiety levels in the same manner as the patients' scores were. The following results were obtained (numbers represent the nurses in each category):

<u>TMAS score</u>	<u>Yale</u>	<u>Waterbury</u>	<u>Sharon</u>	<u>New Milford</u>
High	1	4	0	2
Moderate	18	30	8	4
Low	9	8	2	0
<u>Mean TMAS score</u>	8.1	9.6	9.5	15.0

There would appear to be comparable scores in the first three hospitals, while the scores of the New Milford nurses are much higher. Because of the small number of nurses available for interview on any given day at New Milford, however, it would be difficult to determine whether this finding represents a significantly higher anxiety level or an error in sampling.

Since the nurses' anxiety scores did not show the same variation observed with the patients' anxiety scores (i.e., Yale-New Haven highest, followed by Waterbury, Sharon, and New Milford), we are unable to conclude from this small additional study that there was any significant communication of anxiety from the nurses to the patients with whom they associated. Indeed, the opposite may be the case.

In order to test this possibility the TMAS scores for the nurses at Waterbury Hospital were grouped according to the floor to which each nurse was assigned. The mean score for each of the eight floors of nurses was computed. The supervisor of the nursing service was then asked to indicate the four floors in which the nature of the patient population might be most conducive to the production of anxiety among the nurses on that floor. The four floors which she selected were among the top five floors in nurse anxiety, although the supervisor did not know the results of the study. This is suggestive, but far from conclusive, that the significant communication of anxiety may be from patient to nurse, rather than vice versa. Further studies would be required to determine the validity of this hypothesis.

I. Discussion of Four Questions on the Hospitalization Anxiety Scale

We did not originally plan to study the answers to individual questions on the Hospitalization Anxiety Scale, but examination of the results showed the distribution of answers to several questions to be of particular interest. The four questions which will be considered in this section, in the form in which they appeared in the questionnaire, are:

I think that if I had taken better care of myself
I wouldn't be here in the hospital.

I think that the doctor is not telling me the
truth about my illness.

I'm afraid that I won't be able to work as well
when I go back.

Please indicate how often you worry about death
while you are in the hospital.

1. Guilt Feelings

Ninety-two patients indicated that they sometimes or often felt that if they had taken better care of themselves they would not be in the hospital. The working diagnosis for each of these patients is listed on the following chart. The diagnoses have been organized into the following groups: cardiorespiratory, gastrointestinal, orthopedic, genitourinary, and miscellaneous.

Diagnoses of Patients Responding Affirmatively to the Statement:
I think that if I had taken better care of myself I wouldn't be here in the hospital.

Cardiorespiratory

Chest pain, SOB ? pneumonia
Known "growth on lung"
URI, myositis of shoulders
Lung spot, pneumonia, diabetes
ASHD with severe angina
Hypertension, ?CVA
Rule-out myocardial infarction
Angina pectoris
Asthma
Acute auricular fibrillation
Arteriosclerotic heart disease
ASHD with angina
Hypertension of ?etiology
URI, hemoptysis ?etiology

Orthopedic

Cast change
Leg fracture
Fracture and dislocation
Compound leg fracture
Tendon repair
Lumbar disk repair
Herniated disk
Torn meniscus

Gastrointestinal and Abdominal

Peptic ulcer, ASHD
Possible duodenal ulcer,
diverticulosis
Duodenal ulcer
Cirrhosis
Peptic ulcer, rectal bleeding
Abdominal pain (? functional)
Hepatic failure
Possible peptic ulcer
Hiatus hernia, diabetes
Gastrointestinal bleeding
Hepatitis
Abscess of abdominal wound
Cancer of rectum
Hemorrhoids
Peptic ulcer
Acute appendicitis
Renal failure
Chronic cholecystitis
Cholecystitis
Pancreatitis
Ulcerative colitis
Chronic pancreatitis

Genitourinary

Cervical bleeding, ? pernicious anemia
Hysterectomy
Adenomyosis of uterus
Cystocele
Pelvic abscess
Twisted ovarian cyst
Uterine fibroids
Menometrorrhagia
Dyspareunia
Tubal ligation
Carcinoma of cervix
Fibroadenoma of uterus
Metastatic gynecologic carcinoma
Urinary tract infection
Possible ovarian carcinoma
Rectocele and enterocoele
Orchitis, ? appendicitis
Possible tubal pregnancy

Miscellaneous

Headache after fall
Epistaxis for one week
Subtotal thyroidectomy
Varicose veins, varicocoele
Possible leukemia
Possible meningitis
Hernia
Pedal edema
Hernia
Thyroid adenoma
Plastic surgery, facial scars
Nasal polyps
Phlebitis
Leg ulcer
Excision of tumor of back
Small leg ulcer
Pyramidal tract disease of unknown etiology
Ulcer of heel
Dermatitis
Sphenoid carcinoma
Metastatic carcinoma
Thrombophlebitis
Cataract, post-operative infection
Maxillary sinusitis
Psoriatic arthritis
Lymphoma
2 unspecified

75

Diagnoses listed on this chart do not differ markedly from the diagnoses of the remainder of patients in the study, with the exception of the relative paucity of patients with a diagnosed malignancy on this list. Patients with gynecological disorders constituted a higher percentage of the group experiencing guilt feelings than they do of the total patient group (17% of "guilt" group as opposed to 12% of entire group). On the other hand, it is noteworthy that patients hospitalized on the orthopedic service as a result of accidents did not experience feelings of guilt more often than did other patients.

In general, it would appear that there was no single group of patients who were either extremely prone to or free from feelings of guilt when studied only from the point of view of medical diagnosis. The variety of diagnoses which are represented is quite striking. Equally impressive is the inclusion in this list of a number of illnesses which few physicians deem preventable (e.g. lymphoma, nasal polyps, twisted ovarian cyst, asthma, pyramidal tract disease, ovarian carcinoma, renal failure).

Of course patients may experience feelings of guilt about their failure to take care of themselves for reasons which are quite independent of their diagnosed illness. Cultural, religious, social and other factors may determine these feelings. It is because of the multitude of predisposing

factors, the high incidence of guilt feelings, and the wide variety of illnesses represented that prediction or anticipation of these guilt feelings becomes both difficult and important.

2. Truth about Illness

Approximately 14 percent (56/408) of the patients participating in this study indicated a belief that their doctors were not telling them the truth about their illnesses. In order to determine whether this feeling predominated among patients of one hospital more than others or among patients with one type of illness more than others, the following chart was prepared. It lists the diagnoses or symptoms of patients who responded affirmatively to the statement, "I think that the doctor is not telling me the truth about my illness," and groups them according to hospital.

Diagnoses of Patients Answering Affirmatively to the Statement:

"I think that the doctor is not telling me the truth about my illness":

New Milford Hospital

Abdominal pain (? functional)
Hematuria, penile discharge,
testicular pain

Yale-New Haven Hospital

D & C, chronic PID
URI, hemoptysis of unknown origin
Deviated nasal septum
Pyramidal tract disease of unknown etiology
Myasthenia gravis
Polymyositis
Post-op care of sphenoid carcinoma
Known (to patient) breast carcinoma, metastases to brain
Difficult diabetes mellitus,
? hyperthyroidism
Metastatic carcinoma
Mitral valvulotomy
Dego's disease
Jaundice (in patient with etiocholanolone fever)
Infected draining sinuses
Breast mass
Abdominal pain, possible tubal pregnancy
Nasal polyps, septal deviation
Vaginal hysterectomy
Lymphoma
Psoriatic arthritis
Chronic pancreatitis

Sharon Hospital

Headache after fall
ASHD, rule out MI
Hysterectomy for mass & pain
Abdominal, back and leg pain,
possible disk
Kidney and ureteral calculi
Duodenal ulcer
Hypertension, ?CVA

Waterbury Hospital

Hepatic failure
Adenomyosis of uterus
Gastrointestinal bleeding
Prolapsed lumbar disk
Orthopedic problem (unspecified)
Pelvic abscess
Low back pain
Colitis
Pneumonia
Congestive heart failure
Pelvic mass (pre-operative)
Thyroid adenoma
Fibroids of uterus
Inguinal hernia
Bronchitis
Cystocele, rectocele
Menorrhagia, possible malignancy
Arteriosclerotic heart disease
Cervical polyps, fibroid uterus
Weak back
Renal failure
Acute pyelitis
Ovarian cyst
Hysterectomy, appendectomy
2 cases with diagnosis unspecified

Examination of this chart shows that while the larger hospitals have more patients who feel that they are not being told the truth about their illnesses, the distribution is not out of proportion to the distribution of moderate and high anxiety scores among the four hospitals. This would suggest that those situations which cause these doubts among patients (e.g., faulty physician-patient communication, predisposition of certain patients to adopt such an attitude, experience in the hospital which foster this belief) are not peculiar to one or several hospitals.

It will also be noted that many different illnesses are represented on the chart. There are patients from each service (medicine, general surgery, gynecology, surgical subspecialties) except ophthalmology. Also, there is no consistent pattern among the diagnoses, although there are few patients with a diagnosed malignancy. Among the possible explanations for this observation are the following:

- a. The patient who knows of or suspects that he has cancer may be either consciously or unconsciously unwilling to admit to any fears of not being told the truth about his illness.
- b. The patients with malignancy may have been told about their illness.
- c. The problem of what to tell the cancer patient may be sufficiently important to physicians that they take care to leave no doubts in the patients' minds, whether they tell them the truth or not.

In any case, it is clear that knowledge of the diagnoses alone is insufficient information upon which to predict those patients who will have fears or doubts about the truth of the information given them by their physicians. More complete knowledge of the patients personality and background may be of some help in this regard. However, it is noteworthy that no patient--whether he suffer from inguinal hernia, deviated nasal septum or lymphoma -- may be presumed to be free of the worry that he is being denied important information about his illness.

3. Ability to Return to Work

Sixteen percent (67/408) of the patients in this study expressed worry about their ability to return to work after discharge from the hospital. The following chart lists the diagnoses of patients who manifested this concern.

Diagnoses of Patients Answering Affirmatively to the Statement:
I am afraid that I won't be able to work as well when I go back.

Sharon Hospital

Spondylarthrosis, lumbar compression fracture
 Diverticulosis, ? duodenal ulcer
 Minor CVA, treatment of hypertension

New Milford Hospital

Bilateral hallux valgus
 Hemorrhagic nodule in inguinal hernia
 Diabetes, appendectomy
 Obesity, diabetes, hypertension, angina

Waterbury Hospital

Leg fracture
 Osteoporosis of knee
 Compound leg fracture
 Unspecified orthopedic problem
 Diabetes, pyelonephritis
 Adenomyosis of uterus
 Incisional hernia
 Hernia
 Lumbar disk
 Pedal edema
 Low back pain
 Lumbar disk herniation
 Prostatism
 Fissure in ano
 Uterine fibroids
 Unspecified gynecological problem
 Headaches
 Metastatic melanoma
 Phlebitis
 ASHD with angina
 Leg ulcer
 Acute gastric retention
 Acute cholecystitis

Hypertension of unknown etiology
 Lumbar sympathectomy, arterial insufficiency
 Arthritis
 D & C, chronic PID
 URI, hemoptysis of unknown etiology
 Known (to patient) metastatic carcinoma
 Carcinoma of cervix
 Detached retina
 Edematous appendix of testis
 Abdominal mass (gynecological)
 Polymyositis
 Post-op care sphenoid carcinoma
 Known (to patient) breast carcinoma, metastases to brain
 Metastatic carcinoma
 Metastatic gynecological carcinoma
 Mitral valvulotomy
 Internal carotid ligation for epistaxis
 Metastatic carcinoma
 Hydrosalpingectomy, D & C, multiparity
 Jaundice
 Patelectomy
 Spinal fusion for fracture
 Onychogryphosis, toe amputation
 Hypertrophic lumbar arthritis
 Removal of lumbar disk
 Metastatic carcinoma of bone (known to patient)
 Inguinal hernia
 Ulcerative colitis
 Thrombophlebitis
 Pilonidal cyst
 Cholecystectomy
 Cervical rhizotomy
 Cholelithiasis
 Lymphoma
 Chronic pancreatitis
 Psoriatic arthritis
 Temporal arteritis

Yale-New Haven Hospital

Of the 67 patients listed on the preceding chart, 23 suffered from disorders of the back and extremities (including both orthopedic and non-orthopedic problems). An additional 10 patients had a malignancy. The remaining patients had a variety of diagnoses.

The disproportionately great representation of disorders involving the back and extremities could reflect one or several of the following phenomena:

1. Illnesses of these regions are often difficult to treat and require long convalescence.
2. Patients may tend to view these regions of the body as more necessary to their earning ability and may feel more threatened by a disorder of these regions than by an equally debilitating illness of another part of the body.
3. "Arm," "leg," and "back" are part of the everyday speech and thought content of most people and they are often aware of these parts of the body. "Pancreas," "liver", and "gall bladder" are not part of the everyday vocabulary of most people, their functions are not well known to these people, and, as a result, the significance of disorders of these organs may not be appreciated.

The reason for a patient to worry about his ability to resume his customary work following discharge from the hospital are, of course, multiple. While we can speculate about a few

of these reasons in a small group of patients in this study, the fact that a large number of patients indicated concerns in this regard points out the necessity for awareness of this fear when dealing with all patients, regardless of their diagnoses and regardless of any preconceived notions about the extent to which a particular illness may affect future work capabilities.

4. Death

Anxiety about death is probably one of the more difficult feelings to assess or measure reliably with any scale, let alone a scale which has only two questions directly pertaining to this problem. Nevertheless, it may be helpful to examine the diagnoses of patients who indicated that they were worried about death. The diagnoses listed are those of patients who responded affirmatively to question 25 on the Hospitalization Anxiety Scale.

While this is the question most directly pertaining to feelings about death, it is not the only question to which an affirmative answer may reflect fears of death. Among the other questions which could have been considered are 5 (afraid of not waking up in the morning), 13 (afraid of bad news), 18 (fear that truth is being withheld) and 24 (worry about future). Indeed, an affirmative answer to almost any question could be construed as a manifestation of death fears.

Diagnoses of Patients Answering "Sometimes" or "Often" to the Statement: Please indicate how often you worry about death while you are in the hospital.

Sharon Hospital

Epigastric, mid-back pain of unknown etiology

New Milford Hospital

Cystocoele, urethrocoele, rectocoele

Yale-New Haven Hospital

D & C, chronic PID
Known (to patient) metastatic carcinoma
Carcinoma of cervix
Metastatic gynecological carcinoma
Post-op care of sphenoid carcinoma
Known (to patient) breast carcinoma, metastases to brain
Infected draining sinuses
Urinary tract infection
Possible sub-dural hematoma
Chronic pancreatitis

Waterbury Hospital

Pyelonephritis, diabetes
Acute back pain
Cast change
Pelvic abscess
Carcinoma of bowel
Pneumonia
Abscess of abdominal wound
Cholecystitis
Carcinoma of rectum
Cystocoele, rectocoele
Acute urinary retention
Headaches
Metastatic melanoma
Arteriosclerotic heart disease
Cellulitis
Dyspareunia

The chart shows that 8 of the 28 patients expressing anxiety about death had a diagnosed malignancy. Eight patients had non-malignant diseases of the genitourinary system. The remaining 12 patients had a variety of diagnoses. The high number of cancer patients on this list may represent frank communication between patient and physician and/or well-founded fears on the part of the patient. The fears of death among the other patients are less readily explained.

Diseases of the genitourinary system, with its associated generative functions, may be particularly stressful or threatening to the patient. Further speculation, however, would go beyond the limits of information obtained in this study. The broad assortment of other diseases represented on the chart suggests that factors in addition to the diagnosed illness may be important in determining which patients worry about death. Among these factors might be age, general physical condition, and presence of significant illnesses not included in the working diagnosis.

J. Selection of Signal Questions

In order to determine which questions might be most useful in selecting or predicting patients with high anxiety levels, we studied the frequency with which an affirmative answer was given by a patient with a high HAS score. In the following chart each question is listed along with the number of affirmative replies, the percentage of the affirmative replies which were given by patients with high HAS scores, and the percentage of affirmative replies which were given by patients with moderate or high HAS scores. Those questions to which the largest percentage of replies are given by patients with high HAS scores are, of course, the best indicators of high degrees of anxiety, while those questions to which affirmative replies are given by patients with moderate or high HAS scores are less valuable indicators of anxiety.

<u>Statement</u>	<u>Affirma-</u> <u>tive</u> <u>replies</u>	<u>% from</u> <u>high</u> <u>HAS</u>	<u>% from</u> <u>high or</u> <u>moderate</u> <u>HAS</u>
While in the hospital I feel that I am under a great deal of strain.	51	61	98
I find it difficult to sleep in the hospital.	181	33	78
I feel like yelling at the nurses and aides.	27	48	96
I become impatient with the nurses and aides.	62	42	95
I am afraid of not waking up in the morning.	18	67	94
I think that the doctors are too slow in helping me.	32	50	100
It makes me nervous to have to sleep in such a high bed.	21	38	90
I worry about the lack of privacy here in the hospital.	41	46	93
I worry that I am being treated like "just another case."	19	84	100
Hospital hours and schedules bother me.	62	34	92
I worry about how I will pay for the hospital bill.	69	52	91
I don't think that the doctors are doing everything they can to help me.	20	60	95
When the doctor comes to give me a report I expect bad news.	61	43	90
I am afraid that the pain will be more than I can stand.	84	46	98
I am afraid that I won't be any better when I get out.	51	65	100
I am afraid that they will let me go too early	18	83	94

<u>Statement</u>	Affirma- tive replies	% from high HAS	% from high or moderate HAS
Having to leave the hospital eventually bothers me.	19	74	95
I think that the doctor is not telling me the truth about my illness.	56	50	93
I feel nervous in the hospital. (Please indicate how often you become nervous, anxious or worry about the following while you are in the hospital:)			
Family	168	38	90
Friends	47	53	91
Money	98	53	94
Your illness	148	46	97
Your future	74	62	99
Death	30	60	97
Treatment in the hospital	17	82	100
Being around many other people	41	39	88
Being in a new and different situation	57	42	86
Pain	131	41	89
Not being told enough about your illness and treatment	62	56	94
Future handicap	59	64	97
Future work	62	63	97
Feeling lonely	85	53	94
I have nightmares and bad dreams more often than I do at home.	25	24	96

<u>Statement</u>	<u>Affirma-</u> <u>tive</u> <u>replies</u>	<u>% from</u> <u>high</u> <u>HAS</u>	<u>% from</u> <u>high or</u> <u>moderate</u> <u>HAS</u>
My feelings are hurt more easily than most patients'.	28	61	96
I am sometimes afraid of tests and types of treatment even when I know they can't hurt me.	72	49	96
I feel helpless with my illness.	108	47	89
Feeling helpless bothers me.	106	49	90
I worry about my family more than most patients.	46	46	100
I am afraid that I won't be able to work as well when I go back.	67	57	97

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Inspection of the above chart shows that several questions correlated with high or high and moderate HAS scores better than others. If we arbitrarily define a signal question for high anxiety as one to which greater than 70 percent of affirmative answers were given by patients with high HAS scores, we find that the following four questions meet this qualification:

I worry that I am being treated like "just another case."

I am afraid that they will let me go too early.

Having to leave the hospital eventually bothers me.

(I worry about) treatment in the hospital.

A question which is a poor indicator of hospitalization anxiety will be defined as one to which less than 40 percent of affirmative answers were given by patients with high HAS scores. The following six questions fall into this group:

I find it difficult to sleep in the hospital.

It makes me nervous to have to sleep in such a high bed.

Hospital hours and schedules bother me.

(I worry about) family.

(I worry about) being around many other people.

I have nightmares and bad dreams more often than I do at home.

The fact that strict criteria were used in defining the low anxiety group accounts for the uniformly high percentages found in the far right hand column. A patient could only answer a maximum of three questions affirmatively and remain in the low anxiety group. With the exception of the statement, "I find it difficult to sleep in the hospital," an affirmative answer to any question was usually associated with a moderate or high level of anxiety in the patient responding.

It would appear that some statements were more indicative of or more likely to be associated with high levels of hospitalization anxiety than others. Although each of these four questions elicited a small number of affirmative replies, they might well serve as signal questions in selecting patients with the greatest likelihood of having high levels of anxiety as measured by the HAS.

VI. Summary

1. We have presented a study of hospitalization anxiety in 408 medical and surgical patients in four voluntary, non-profit, general hospitals in Connecticut. The hospitals included a major teaching center (Yale-New Haven Hospital, University Service), a large community hospital (Waterbury Hospital), and two small community hospitals (Sharon Hospital and New Milford Hospital). Ninety-seven percent of the patients satisfying the criteria for inclusion in this study were interviewed.

2. The patient populations in the four hospitals were found to be quite similar on the basis of marital status, occupation, education, social status, country of birth, sex and number of previous hospitalizations. Small to moderate differences between the hospital populations were noted on the basis of age, religion, race, type of therapy (medical vs. surgical) and number of patients being treated by surgical sub-specialty services.

3. The evolution of the Hospitalization Anxiety Scale used in this study has been presented along with a discussion of several other anxiety scales.

4. Patient anxiety levels were highest in the university hospital and lowest in the two small community hospitals, with the large community hospital falling between these two groups.

5. The interhospital variations in patient anxiety were found with the Hospitalization Anxiety Scale, the Taylor Manifest Anxiety Scale, ratings supplied by the interviewer and ratings supplied by the nurses, as well as with a weighted scale which included these four parameters along with the patients' self-ratings, evaluations by the physicians, a guilt rating, and ancillary ratings based on patient interviews.

6. The different levels of hospitalization anxiety in the several hospitals were pointed out more sharply with the Hospitalization Anxiety Scale than with any of the other instruments used in this study.

7. When the patient population was subdivided according to demographic groupings the following differences in the anxiety levels were noted:

- a. Age: Anxiety decreased as age increased.
- b. Religion: Catholic patients were generally more anxious than Protestant patients.
- c. Race: Negro patients were significantly more anxious than white patients.
- d. Sex: Female patients were more anxious than male patients.
- e. Number of previous hospitalizations:
Patients with seven or more hospitalizations were somewhat more anxious than less-frequently hospitalized patients.
- f. Service to which admitted: Gynecological and orthopedic patients showed higher levels of anxiety than general surgical patients.

Only minimal variations were noted with marital status, occupation, education, social status, country of birth, and type of therapy given.

7. There was good correlation between HAS scores, TMAS scores and the interviewer's evaluation of the patients. However, striking disparities between the doctors' and nurses' evaluation on one hand and patients' self-ratings and HAS scores on the other were noted.

8. When non-white and surgical subspecialty patients were eliminated and the remaining patients were matched variously for age, religion, sex, and type of therapy (medical vs. surgical), the interhospital variations in levels of patient anxiety persisted.

9. With the possible exception of patients with malignancies there were no striking variations in amount of anxiety on the basis of the patients' working diagnoses. The cancer patients tended to fall into the higher anxiety levels.

10. In one small community hospital and in the large community hospital patients who knew hospital personnel before admission were less anxious than those who did not. The opposite was the case in the university hospital.

11. Affirmative answers to the following questions were found to be most often associated with high anxiety levels: "I worry that I am being treated like 'just another case,'" "I am afraid that they will let me go too early," "Having to leave the hospital eventually bothers me," and "I worry about treatment in the hospital."

VII. Discussion and Conclusions

Some speculations and discussion about the causes, measurement and significance of hospitalization anxiety are in order but an exhaustive treatment of these problems would require a book. In this concluding section we shall refer to the results of this and other studies, but some of our statements will be based on observations and hypotheses which cannot be verified satisfactorily.

The two central concepts in our discussion are anxiety and hospitalization. We defined anxiety as unpleasant experience usually perceived as a result of an environmental change and experienced as a threat to one's security. Hospitalization occurs when an adverse change in a person's physical condition is of sufficient gravity to cause him to leave his customary surroundings and to enter a health care institution. In order to relate anxiety to hospitalization we shall begin with a discussion of four aspects of the hospitalization process: the terminus a quo, the terminus ad quem, the person involved and the precipitating cause.

The terminus a quo is usually the patient's home, but more broadly it is everything from which he is separated when he enters the hospital. This includes his family, friends, and his employment and recreation. All these facets of the patient's environment may contribute to his anxiety through his worries about leaving them or his fears or eagerness to return to them.

He may also view hospitalization as a respite from responsibilities, but feel guilty about such secondary gains from this period of confinement.

In the present study patients expressed anxiety about the following aspects of the environment from which they were separated (figures in parentheses indicate the number of patients voicing each concern): family (148), ability to return to work (67), future work (62), future handicap (59), friends (47), leaving the hospital and returning to home (19).

Of course, the effect of the patient's separation from his customary surroundings is not always detrimental to his medical condition and its treatment. This separation may indeed be a vital part of the therapy, particularly in those instances in which the environmental stresses contributed to the present illness. In these cases both the patient and the physician should understand the benefits of separation and attempt to restructure the home environment in such a way as to permit these benefits to continue.

The terminus ad quem of the hospitalization process, the hospital itself, plays an equally large role in the production of anxiety. Hospitalization involves contact with many people, whose roles are unfamiliar to him and subjects him to procedures which confront him at a time when his ability to make rapid adjustments is impaired.

The patient must also contend with some adverse connotations of the hospitalization experience. Not too long ago the hospital was the place to which a person went to die. Even today the physician informing a patient that he must enter the hospital may be greeted by an attitude of despair or resignation as often as by an indication of hope or appreciation that additional treatment is available.

The sources of anxiety within the hospital include the hospital personnel (physicians, nurses, aides), physical surroundings (rooms, food, beds), other patients, and the general atmosphere and practices (hours, tests, schedules). In the present study patients expressed anxiety about the following aspects of the hospital environment (figures in parentheses indicate the number of patients acknowledging each concern): tests and treatments (72), hospital bill (69), hours and schedules (62), nurses and aides (62), new and different situation (57), lack of privacy (41), being around many other people (41), high beds (21), and lack of individualized care (19).

The physician-patient relationship during hospitalization may serve to produce or alleviate anxiety. Communication would seem to be the central issue as illustrated by the following list of anxiety manifestations considered in this study (figures in parentheses indicate the number of patients voicing each concern): insufficient information about illness given to

patient (62), physician not telling the truth (56), physician too slow (32) and physician not doing everything possible (20).

The illness precipitating admission is the third factor to be considered in hospitalization anxiety. Both the physical discomfort and the psychological distress involved with the illness are important in this context. The symptoms from which the patient may suffer are quite numerous. However, in this study we inquired only about pain. We found that 148 patients indicated anxiety about their illness, 131 worried about pain and 84 worried that they would not be able to stand the pain.

In addition to these immediate anxieties about the illness and its symptoms, numerous patients were concerned about the present or future significance of their illnesses. The following areas of anxiety were evaluated in this regard (figures in parentheses indicate the number of patients voicing each concern): feeling helpless with illness (108), future work (62), future handicap (59), adverse report from physician (61), lack of improvement (51), death (30) and leaving the hospital too early (18).

It is obvious that illness means more than physical disability. It is a period in which a patient's emotional, social and economic securities are threatened. Physical distress is intertwined with mental distress and the patient is reminded of both his somatic and his psychological fallibilities.

When the physical crises have passed the patient often has much time for reflection. During this time the worries, fears and anxieties which could be ignored or suppressed when physical functioning was intact spring into awareness. The outcome of this stressful experience depends, to a large extent, on the patient's background and this is our fourth topic of consideration.

The person involved in the hospitalization process is the most variable factor of the four we have mentioned. Patients may have similar home situations, similar illnesses and enter similar hospitals and yet have vastly different levels or areas of anxiety during hospitalization. This emphasizes the important role of the patient's personality and background in determining his predisposition toward experiencing anxiety in a given situation.

His predisposition is the sum of his conditioning in numerous stressful experiences in the past. These incidents include previous contact with physicians and possibly hospitalizations, contact with strangers, association with authority figures, instances of physical discomfort, periods of separation from customary environment and many other experiences of emotional insecurity. Indeed, we might say that the patient's predisposition to hospitalization anxiety is the product of his antecedent experiences of anxiety.

In speculating about the interhospital variations in patient anxiety levels we shall examine the role of each of the four factors which we have considered. Four questions are pertinent to this discussion: Are the patients separated from comparable surroundings? Are they entering similar hospitals? Are they suffering from equally distressing illnesses? Do they have similar predispositions toward anxiety?

Waterbury, New Milford and Sharon Hospitals receive most of their patients from their respective towns and their immediate environs. Yale-New Haven Hospital serves the New Haven area but also receives a large number of patients by referral from physicians in other parts of Connecticut. The inconveniences imposed by the greater distance between the hospital and the patient's home may have contributed to the higher anxiety levels among patients at Yale-New Haven.

In Section IV:B we observed that the four hospital populations varied little according to marital status, occupation, education and social status. Somewhat greater differences were observed on the basis of age, religion and race. However, the persistence of the interhospital variations when the latter differences were eliminated suggests that these environmental factors do not completely explain the different levels of hospitalization anxiety.

The importance of the second factor, the hospital, is more difficult to assess. New Milford Hospital and Sharon Hospital were quite similar in appearance, facilities, size of

staff and general atmosphere. Waterbury Hospital was much larger but otherwise differed very little from the smaller hospitals. Yale-New Haven Hospital, on the other hand, had the atmosphere of a major university medical center, replete with a large house staff, an active teaching program and many ancillary personnel. In addition, its reputation for emphasis on research and training comforted some patients but caused others to feel that their medical care was secondary to the education of the physicians. It is possible that these differences among the four hospitals contributed to the varying levels of patient anxiety.

In Section V:F we commented on the difficulties encountered in correlating hospitalization anxiety with the patient's diagnosis and his understanding of his illness. The charts in Section V:I demonstrated that many illnesses were treated in each of the four hospitals (e.g., hypertension, peptic ulcer, cholecystitis, uterine fibroids), although there were patients at Yale-New Haven with diseases rarely treated outside the university medical center (e.g., etiocholanolone fever, Dego's disease).

The interhospital variations in patient anxiety observed in this study may be related to illness in two ways. It is possible that patients in the large hospitals (and particularly the university hospital) suffered from diseases which were either physically more distressing or more likely to be associated with anxiety. More importantly, however, patients who were

referred to these hospitals from smaller hospitals may have feared that their illnesses were no longer amenable to treatment in more familiar surroundings.

Fourthly, we come to the individual predispositions to hospitalization anxiety. We have stated that this is the most variable of the four factors which we have discussed. In examining the demographic comparisons of the hospital populations we pointed out many similarities among the four groups. However, we have no information about each patient's antecedent experiences of anxiety and shall therefore refrain from hypothesizing about the contribution of these experiences to the interhospital variations.

The wide variety of individual predispositions to anxiety does point out one of the major problems in the measurement of anxiety which we mentioned earlier, namely the difficulty in determining a "normal" level of anxiety. When anxiety is defined as the score on a scale it is tempting to use the same range of normal for each person to whom the scale is administered. This practice ignores individual variations or the law of basic value.

In considering the anxiety level of any patient it would be far better to compare the measured level with the level predicted on the basis of knowledge of the patient's background, his personality structure and his medical problem. We would suggest, therefore, that any anxiety scale be accompanied by

clinical assessment of the patient. This practice would be advantageous in diagnostic surveys as well as in therapeutic situations, since the need for accurate assessment is important in both studies.

Lastly, we come to the significance of hospitalization anxiety, a matter about which we may only speculate since we have not attempted to determine whether this anxiety prolonged or complicated the hospital course of our patients or whether it had any effect after discharge from the hospital.

Inasmuch as anxiety may be a normal phenomenon resulting from a threatening environmental change we feel that the presence of hospitalization anxiety does not necessarily portend ill. Rather it is the discrepancy between the actual anxiety level and the most accurately predictable level that may indicate the need for intervention or therapy.

This discrepancy may be in the direction of too great or too little anxiety. The patient who practices denial of his worries and anxieties to the extent that his ability to function effectively is severely impaired is just as abnormal as the patient whose anxiety is much greater than his background and present condition would merit.

While the measurement of hospitalization anxiety is not an easy task it is far less difficult than the prediction of the normal range of anxiety for a particular patient in a given clinical situation. The patient's vital statistic (e.g. age, sex, race), medical background (e.g. number of previous hospitali-

zation) and symptoms or diagnosis may assist somewhat with the prediction, but it is doubtful that one can consistently obtain sufficient information to make this prediction accurately.

Hopefully recognition of this difficulty will discourage unwarranted generalizations about the probability for any patient or group of patients to be anxious. This study has demonstrated different levels of anxiety among subgroups of a population of medical and surgical patients. However, rather than stressing the significance of these variations and contributing to the preconceptions about patient anxiety, we would emphasize the need for awareness and anticipation of the unexpected. It is only by realizing that any patient may feel anxious about any aspect of his hospitalization that we will be able to meet the challenge of understanding hospitalization anxiety.

VIII. Appendix

1. Taylor Manifest Anxiety Scale
2. List of Questions for Hospitalization
Anxiety Scale prior to Pilot Study
3. Pilot Study Questionnaire
4. Hospitalization Anxiety Scale
5. Complete Questionnaire
6. Interview Permission Form
7. Doctor's Rating Form
8. Nurse's Rating Form
9. Questionnaire for Study of Nurses

1. Taylor Manifest Anxiety Scale

TAYLOR SCALE

1. True False I do not tire quickly.
2. False True I am often sick to my stomach.
3. True False I am about as nervous as other people.
4. True False I have very few headaches.
5. False True I work under a great deal of strain.
6. False True I cannot keep my mind on one thing.
7. False True I worry over money and business.
8. False True I frequently notice my hand shakes when I try to do something.
9. True False I blush as often as others.
10. False True I have diarrhea ("the runs") once a month or more.
11. False True I worry quite a bit over possible troubles.
12. True False I practically never blush.
13. False True I am often afraid that I am going to blush.
14. False True I have nightmares every few nights.
15. True False My hands and feet are usually warm enough.
16. False True I sweat very easily even on cool days.
17. False True When embarrassed I often break out in a sweat which is very annoying.
18. True False I do not often notice my heart pounding and I am seldom short of breath.
19. False True I feel hungry almost all the time.
20. False True Often my bowels don't move for several days at a time.
21. False True I have a great deal of stomach trouble.
22. False True At times I lose sleep over worry.
23. False True My sleep is restless and disturbed.
24. False True I often dream about things I don't like to tell other people.
25. False True I am easily embarrassed.
26. False True My feelings are hurt easier than most people.
27. False True I often find myself worrying about something.

- lse True 28. I wish I could be as happy as others.
- ue False 29. I am usually calm and not easily upset.
- lse True 30. I cry easily.
- lse True 31. I feel anxious about something or someone almost all of the time.
- ue False 32. I am happy most of the time.
- lse True 33. It makes me nervous to have to wait.
- lse True 34. At times I am so restless that I cannot sit in a chair for very long.
- lse True 35. I have often felt that I faced so many difficulties I could not overcome them.
- lse True 36. At times I have been worried beyond reason about something that really did not matter.
- ue False 37. I do not have as many fears as my friends.
- lse True 38. I am more self-conscious than most people.
- lse True 39. I am the kind of person who takes things hard.
- lse True 40. I am a very nervous person.
- lse True 41. Life is often a strain for me.
- lse True 42. Sometimes I become so excited that I find it hard to get to sleep.
- lse True 43. I have been afraid of things or people that I know could not hurt me.
- lse True 44. I certainly feel useless at times.
- lse True 45. I find it hard to keep my mind on a task or job.
- lse True 46. At times I think I am no good at all.
- lse True 47. I am not at all confident of myself.
- lse True 48. At times I feel that I am going to crack up.
- lse True 49. I don't like to face a difficulty or make an important decision.
- ue False 50. I am very confident of myself.

2. List of Questions for Hospitalization
Anxiety Scale prior to Pilot Study

General questions:

1. I am often afraid of not waking up in the morning.
2. I think that the doctors are too slow in helping me get well.
3. It makes me nervous to have to sleep in such a high bed.
4. I feel very helpless with my illness.
5. Feeling helpless bothers me very much.
6. I worry about the lack of privacy here.
7. I worry that I am being treated like "just another case."
8. Hospital hours and schedules bother me very much.
9. I worry a lot about my family, relatives, and friends.
10. I worry about my family more than most people.
11. I am often afraid that I won't be able to work as well when I go back.
12. I worry often about how I will pay for the hospital bill.
13. I don't think that the doctors are doing everything they can to help me.
14. When the doctor gives me a report I usually expect bad news.
15. I am often afraid that the pain will be more than I can stand.
16. I am afraid that I won't really be any better when I get out.
17. I often think that if I had taken better care of myself I wouldn't be here.
18. I am often afraid that they will let me go too early.
19. Having to leave the hospital sooner—or-later worries me.
20. I often think that the doctor is not telling me the truth about my illness.

21. While in the hospital I feel that I am under a great deal of strain.
22. I have nightmares and bad dreams more often than I do at home.
23. I often find it very difficult to sleep in the hospital.
24. My feelings are hurt more easily than most patients'.
25. I am sometimes afraid of things or people that I know cannot hurt me.
26. Sometimes I feel like yelling at the nurses or aides.

Surgery:

27. I am afraid of the anaesthetic (of being put to sleep).
28. I am afraid of what I might say during the operation.
29. I am afraid of what they will do to me during the operation.
30. I worry a lot about the pain which I might have after the operation.
31. I am afraid that I won't be any better after the operation.

3. Pilot Study Questionnaire

Hospital _____

Unit number _____ Age _____ Address _____

Occupation (or husband's) _____ Education _____

Religion _____ National origin _____ Race _____ Sex _____

Previous hospitalization (Total _____)
Date Hospital Reason

Please describe your arrival at the hospital. Since you first arrived, has anyone visited you to hear your complaints, to ask for your requests, or to explain hospital life?

Did you know any of the nurses, aides or other employees of the hospital before, either from previous hospitalization or from social contact outside the hospital?

Did knowing these people help you adjust to hospital life in any way or help you feel more at ease?

Have you discussed going to the hospital with any relatives or friends who have recently been in the hospital?

What have you heard about this hospital?

Would you like to know more about how hospitals operate? Do you think you would feel more at ease if you did?

Do you think most people know enough about hospitals?

Hospitals vary quite a bit in size. This hospital is a large one. Have you ever been in a small hospital? How do you think your nursing treatment would differ in a small hospital?

How do you think the medical treatment might differ?

What do you know about your present illness (or surgery)? Have you read anything about it or looked it up?

What are your feelings about hospital meals (hours, eating in bed, eating with other patients around, food, not wanting to complain)?

How do you feel about having other patients around? Being alone? Do you think hospital patients should be given more privacy? Should have more patients around?

What do you think about hospital gowns? Does it matter to you whether you wear the hospital gown or your own night clothes?

Do you think most patients make too few or too many demands on the nurses' time? Do you think the nurses and aides should spend more time talking with the patients?

What would you like to see done differently if you or a friend or relative came back to the hospital as a patient?

TAYLOR SCALE

1. True False I do not tire quickly.
2. False True I am often sick to my stomach.
3. True False I am about as nervous as other people.
4. True False I have very few headaches.
5. False True I work under a great deal of strain.
6. False True I cannot keep my mind on one thing.
7. False True I worry over money and business.
8. False True I frequently notice my hand shakes when I try to do something.
9. True False I blush as often as others.
10. False True I have diarrhea ("the runs") once a month or more.
11. False True I worry quite a bit over possible troubles.
12. True False I practically never blush.
13. False True I am often afraid that I am going to blush.
14. False True I have nightmares every few nights.
15. True False My hands and feet are usually warm enough.
16. False True I sweat very easily even on cool days.
17. False True When embarrassed I often break out in a sweat which is very annoying.
18. True False I do not often notice my heart pounding and I am seldom short of breath.
19. False True I feel hungry almost all the time.
20. False True Often my bowels don't move for several days at a time.
21. False True I have a great deal of stomach trouble.
22. False True At times I lose sleep over worry.
23. False True My sleep is restless and disturbed.
24. False True I often dream about things I don't like to tell other people.
25. False True I am easily embarrassed.
26. False True My feelings are hurt easier than most people.
27. False True I often find myself worrying about something.

- lse True 28. I wish I could be as happy as others.
- ue False 29. I am usually calm and not easily upset.
- lse True 30. I cry easily.
- lse True 31. I feel anxious about something or someone almost all of the time.
- ue False 32. I am happy most of the time.
- lse True 33. It makes me nervous to have to wait.
- lse True 34. At times I am so restless that I cannot sit in a chair for very long.
- lse True 35. I have often felt that I faced so many difficulties I could not overcome them.
- lse True 36. At times I have been worried beyond reason about something that really did not matter.
- ue False 37. I do not have as many fears as my friends.
- lse True 38. I am more self-conscious than most people.
- lse True 39. I am the kind of person who takes things hard.
- lse True 40. I am a very nervous person.
- lse True 41. Life is often a strain for me.
- lse True 42. Sometimes I become so excited that I find it hard to get to sleep.
- lse True 43. I have been afraid of things or people that I know could not hurt me.
- lse True 44. I certainly feel useless at times.
- lse True 45. I find it hard to keep my mind on a task or job.
- lse True 46. At times I think I am no good at all.
- lse True 47. I am not at all confident of myself.
- lse True 48. At times I feel that I am going to crack up.
- lse True 49. I don't like to face a difficulty or make an important decision.
- ue False 50. I am very confident of myself.

The following statements describe feelings experienced by many patients while they are in the hospital. Please circle the answer which best describes how you feel while you are now in the hospital. Please answer every question.

1. While in the hospital I feel that Always Frequently Sometimes Never I am under a great deal of strain.
2. I have nightmares and bad dreams....more frequently...less frequently.. than I do at home.
3. I find it difficult to sleep in Always Frequently Seldom Never the hospital
4. My feelings are hurt more easily than most patients. How true is this of you? True False
5. I am sometimes afraid of things or people I know cannot hurt me True False
6. I feel like yelling at the nurses and aides. Always Frequently Seldom Never
7. I am afraid of now waking up in the morning. Always Frequently Seldom Never
8. I think that the doctors are too slow in helping me get well. Always Frequently Seldom Never
9. It makes me nervous to have to sleep in such a high bed. Always Frequently Seldom Never
10. I feel helpless with my illness. True False
11. Feeling helpless bothers me. Always Frequently Seldom Never
12. I worry about the lack of privacy here in the hospital. Alwyas Frequently Seldom Never
13. I worry that I am being treated like "just another case." Always Frequently Seldom Never
14. Hospital hours and schedules bother me. Always Frequently Seldom Never
15. I worry about my family, relatives, and friends. Always Frequently Seldom Never
16. I worry about my family more than most people. True False
17. I am afraid that I won't be able to work as well when I go back. True False
18. I worry about how I will pay for the hospital bill. Always Frequently Seldom Never

19. I don't think that the doctors are Always Frequently Seldom Never doing everything they can to help me.
20. When the doctor gives me a report Always Frequently Seldom Never I expect bad news.
21. I am afraid that the pain will be Always Frequently Seldom Never more than I can stand.
22. I am afraid that I won't be any Very true Sometimes true Never better when I get out. How true true is this of you?
23. I am afraid that they will let me Always Frequently Seldom Never go too early.
24. Having to leave the hospital Always Frequently Seldom Never sooner-or-later worries me.
25. I think that the doctor is not Always Frequently Seldom Never telling me the truth about my illness.
26. I think that if I had taken better Very true Sometimes true Never care of myself I wouldn't be here. true How true is this of you?
27. I feel nervous in the hospital. Always Frequently Seldom Never

Surgery patients only:

- S1. I am afraid of being put to sleep. Very true Sometimes Never true
- S2. I am afraid of what I might say Very true Sometimes Never true during the operation.
- S3. I am afraid of what they will do Very true Sometimes Never true to me during the operation.
- S4. I worry about the pain which Always Frequently Seldom Never I might have after the operation.
- S5. I am afraid that I won't be any Very true Sometimes Never true better after the operation.
- S6. I worry that I may not live Always Frequently Seldom Never through the operation.

If you had to rate how anxious you are (how much you worry and how nervous you are) from 1 to 5, how would you rate yourself?

- 5 very anxious
- 4
- 3 moderately anxious
- 2
- 1 very much at ease

How do you think others would rate you?

- 5 very anxious
- 4
- 3 moderately anxious
- 2
- 1 very much at ease

Please check everything which bothers you or which you worry about while you are in the hospital:

- | | |
|--|---|
| <input type="checkbox"/> Family | <input type="checkbox"/> Treatment in the hospital |
| <input type="checkbox"/> Friends | <input type="checkbox"/> Being around many other people |
| <input type="checkbox"/> Money | <input type="checkbox"/> Pain |
| <input type="checkbox"/> Your illness | <input type="checkbox"/> Future handicap |
| <input type="checkbox"/> Your future | <input type="checkbox"/> Future work |
| <input type="checkbox"/> Death | <input type="checkbox"/> Being lonely |
| <input type="checkbox"/> Anything else _____ | |
| _____ | |
| _____ | |

4. Hospitalization Anxiety Scale

The following statements describe feelings experienced by many patients while they are in the hospital. When I read each question please tell me if you feel that way never, sometimes, or often.

- 1 N S O While in the hospital I feel that I am under a great deal of strain.
- 2 N S O I find it difficult to sleep in the hospital.
- 3 N S O I feel like yelling at the nurses and aides.
- 4 N S O I become impatient with the nurses and aides.
- 5 N S O I am afraid of not waking up in the morning.
- 6 N S O I think that the doctors are too slow in helping me.
- 7 N S O It makes me nervous to have to sleep in such a high bed.
- 8 N S O I worry about the lack of privacy here in the hospital.
- 9 N S O I worry that I am being treated like "just another case."
- 10 N S O Hospital hours and schedules bother me.
- 11 N S O I worry about how I will pay for the hospital bill.
- 12 N S O I don't think that the doctors are doing everything they can to help me.
- 13 N S O When the doctor comes to give me a report I expect bad news.
- 14 N S O I am afraid that the pain will be more than I can stand.
- 15 N S O I am afraid that I won't be any better when I get out.
- 16 N S O I am afraid that they will let me go too early.
- 17 N S O Having to leave the hospital eventually bothers me.
- 18 N S O I think that the doctor is not telling me the truth about my illness.
- 19 N S O I feel nervous in the hospital.

Please indicate how often you become nervous, anxious or worry about the following while you are in the hospital:

- 20 N S O Family
- 21 N S O Friends
- 22 N S O Money
- 23 N S O Your illness

24 N S 0 Your future
25 N S 0 Death
26 N S 0 Treatment in the hospital
27 N S 0 Being around many other people
28 N S 0 Being in a new and different situation
29 N S 0 Pain
30 N S 0 Not being told enough about your illness and treatment
31 N S 0 Future handicap
32 N S 0 Future work
33 N S 0 Feeling lonely

The last few questions are yes-and-no questions.

34 N Y I have nightmares and bad dreams more often than I do at home.
35 N Y My feelings are hurt more easily than most patients'.
36 N Y I am sometimes afraid of tests and types of treatment even when I know they can't hurt me.
37 N Y I feel helpless with my illness.
38 N Y Feeling helpless bothers me.
39 N Y I worry about my family more than most patients.
40 N Y I am afraid that I won't be able to work as well when I go back.

1. $\frac{1}{2} \int_{\Omega} |\nabla u|^2 dx - \int_{\Omega} u \phi dx + \int_{\Omega} \psi u dx = 0$

On the other hand, the effect of the different types of energy on the rate of diffusion is not yet clear.

5

2000-01-01 00:00:00

• The following table summarizes the results of the study.

5. Complete Questionnaire

Hospital _____	Country of birth	USA	_____		
Unit number _____	Race	W	N	O	_____
Age _____ Status S M D W Se RM	Sex	M	F	_____	
Occupation _____ (H)	Previous hospitalization	_____			
Education _____	Reason for present hosp.	_____			
Religion C P J _____	Service	I	S0	SPr	SPo

Y N Did you know any of the nurses, aides, or other employees of the hospital before, either from previous hospitalization or from social contact?

Y N MA Did knowing these people help you adjust to hospital life or help you feel more at ease?

Y N Have you discussed going to the hospital with any relatives or friends who have recently been in the hospital?

What have you heard about this hospital?

Y N Would you like to know more about how hospitals work?

Y N Do you think you would feel more at ease if you did?

Y N Do you think most people know enough about hospitals?

Y N Hospitals vary quite a bit in size. This hospital is a large (small) one. Have you ever been in a small (large) hospital?

How do you think your nursing treatment might differ in a small hospital?

How do you think the medical treatment might differ?

Much Some Noth What do you know about your present illness?

B Mag Dr N How have you learned about your illness?

Y N Do you have any complaints about the food?

Y N DK Are you on a special diet?

L D ND DK What is your opinion about hospital gowns?

What would you like to see done differently if you or a friend or relative came back to the hospital as a patient?

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TAYLOR SCALE

True	False	I do not tire quickly.
False	True	I am often sick to my stomach.
True	False	I am about as nervous as other people.
True	False	I have very few headaches.
False	True	I work under a great deal of strain.
False	True	I cannot keep my mind on one thing.
False	True	I worry over money and business.
False	True	I frequently notice my hand shakes when I try to do something.
True	False	I blush as often as others.
False	True	I have diarrhea ("the runs") once a month or more.
False	True	I worry quite a bit over possible troubles.
True	False	I practically never blush.
False	True	I am often afraid that I am going to blush.
False	True	I have nightmares every few nights.
True	False	My hands and feet are usually warm enough.
False	True	I sweat very easily even on cool days.
False	True	When embarrassed I often break out in a sweat which is very annoying.
True	False	I do not often notice my heart pounding and I am seldom short of breath.
False	True	I feel hungry almost all the time.
False	True	Often my bowels don't move for several days at a time.
False	True	I have a great deal of stomach trouble.
False	True	At times I lose sleep over worry.
False	True	My sleep is restless and disturbed.
False	True	I often dream about things I don't like to tell other people.
False	True	I am easily embarrassed.
False	True	My feelings are hurt easier than most people.
False	True	I often find myself worrying about something.

28. False True I wish I could be as happy as others.
29. True False I am usually calm and not easily upset.
30. False True I cry easily.
31. False True I feel anxious about something or someone almost all of the time.
32. True False I am happy most of the time.
33. False True It makes me nervous to have to wait.
34. False True At times I am so restless that I cannot sit in a chair for very long.
35. False True I have often felt that I faced so many difficulties I could not overcome them.
36. False True At times I have been worried beyond reason about something that really did not matter.
37. True False I do not have as many fears as my friends.
38. False True I am more self-conscious than most people.
39. False True I am the kind of person who takes things hard.
40. False True I am a very nervous person.
41. False True Life is often a strain for me.
42. False True Sometimes I become so excited that I find it hard to get to sleep.
43. False True I have been afraid of things or people that I know could not hurt me.
44. False True I certainly feel useless at times.
45. False True I find it hard to keep my mind on a task or job.
46. False True At times I think I am no good at all.
47. False True I am not at all confident of myself.
48. False True At times I feel that I am going to crack up.
49. False True I don't like to face a difficulty or make an important decision.
50. True False I am very confident of myself.

G. O S N I think that if I had taken better care of myself
I wouldn't be here in the hospital.

The following statements describe feelings experienced by many patients while they are in the hospital. When I read each question please tell me if you feel that way never, sometimes, or often.

- 1 N S 0 While in the hospital I feel that I am under a great deal of strain.
- 2 N S 0 I find it difficult to sleep in the hospital.
- 3 N S 0 I feel like yelling at the nurses and aides.
- 4 N S 0 I become impatient with the nurses and aides.
- 5 N S 0 I am afraid of not waking up in the morning.
- 6 N S 0 I think that the doctors are too slow in helping me.
- 7 N S 0 It makes me nervous to have to sleep in such a high bed.
- 8 N S 0 I worry about the lack of privacy here in the hospital.
- 9 N S 0 I worry that I am being treated like "just another case."
- 10 N S 0 Hospital hours and schedules bother me.
- 11 N S 0 I worry about how I will pay for the hospital bill.
- 12 N S 0 I don't think that the doctors are doing everything they can to help me.
- 13 N S 0 When the doctor comes to give me a report I expect bad news.
- 14 N S 0 I am afraid that the pain will be more than I can stand.
- 15 N S 0 I am afraid that I won't be any better when I get out.
- 16 N S 0 I am afraid that they will let me go too early.
- 17 N S 0 Having to leave the hospital eventually bothers me.
- 18 N S 0 I think that the doctor is not telling me the truth about my illness.
- 19 N S 0 I feel nervous in the hospital.

Please indicate how often you become nervous, anxious or worry about the following while you are in the hospital:

- 20 N S 0 Family
- 21 N S 0 Friends
- 22 N S 0 Honey
- 23 N S 0 Your illness

the right side of the equation. This is done by multiplying both sides by $\frac{1}{\sin \theta}$. This gives us:

$$\frac{\partial}{\partial \theta} (\sin \theta) = \frac{\partial}{\partial \theta} (\sin \theta) + \frac{\partial}{\partial \theta} (\cos \theta)$$

On the left side, we have $\frac{\partial}{\partial \theta} (\sin \theta) = \cos \theta$. On the right side, we have $\frac{\partial}{\partial \theta} (\sin \theta) = \cos \theta$ and $\frac{\partial}{\partial \theta} (\cos \theta) = -\sin \theta$. So the equation becomes:

$$\cos \theta = \cos \theta - \sin \theta$$

Subtracting $\cos \theta$ from both sides, we get:

$$0 = -\sin \theta$$

Dividing both sides by $-\sin \theta$, we get:

$$0 = 1$$

This is a contradiction, so our assumption that $\frac{\partial}{\partial \theta} (\sin \theta) = \cos \theta$ must be false. Therefore, $\frac{\partial}{\partial \theta} (\sin \theta) \neq \cos \theta$.

24	N	S	O	Your future
25	N	S	O	Death
26	N	S	O	Treatment in the hospital
27	N	S	O	Being around many other people
28	N	S	O	Being in a new and different situation
29	N	S	O	Pain
30	N	S	O	Not being told enough about your illness and treatment
31	N	S	O	Future handicap
32	N	S	O	Future work
33	N	S	O	Feeling lonely

The last few questions are yes-and-no questions.

34	N	Y	I have nightmares and bad dreams more often than I do at home.
35	N	Y	My feelings are hurt more easily than most patients'.
36	N	Y	I am sometimes afraid of tests and types of treatment even when I know they can't hurt me.
37	N	Y	I feel helpless with my illness.
38	N	Y	Feeling helpless bothers me.
39	N	Y	I worry about my family more than most patients.
40	N	Y	I am afraid that I won't be able to work as well when I go back.

How would you rate yourself on the following scale of anxiety, worry, and nervousness?

- 5 very anxious
- 4
- 3 moderately anxious
- 2
- 1 very much at ease

How do you think others would rate you on this same scale?

- 5 very anxious
- 4
- 3 moderately anxious
- 2
- 1 very much at ease

Background	0	1	2	3	4	5
Test	0	1	2	3	4	5
Action	0	1	2	3	4	5
Overall	0	1	2	3	4	5

6. Interview Permission Form

Dr.

I request your permission to interview _____
in connection with research about anxiety in medical and
surgical patients.

The interview requires approximately 25 minutes and will be
conducted only with the permission of the doctor and patient.

Please circle and initial your reply below. Thank you.

Frank E. Lucente

Permission granted

Permission denied
Reason, if possible:

Initials of physician

Fig. 1. - *Urotheca* sp. n. (♂).

1. *Chlorophytum comosum* (L.) Willd. (syn. *C. capense* L.)

1. **What is the primary purpose of the study?** To evaluate the effectiveness of a new treatment for hypertension.

7. Doctor's Rating Form

Dr.

Please rate on the following anxiety scale (anxiety manifested during hospitalization).

- 5 very anxious
- 4
- 3 moderately anxious
- 2
- 1 very much at ease

This rating is part of a study of hospitalization anxiety currently being conducted at this hospital. Thank you very much for your co-operation.

Frank E. Lucente

8. Nurse's Rating Form

To the Nurse-in-Charge:

Please rate _____ on the following anxiety scale (anxiety manifested during hospitalization).

- | | |
|---|--------------------|
| 5 | very anxious |
| 4 | |
| 3 | moderately anxious |
| 2 | |
| 1 | very much at ease |

This rating is part of a study of hospitalization anxiety currently being conducted at this hospital. Thank you very much for your co-operation.

Frank E. Lucente

-For $f(x) = 0$
-if signs of $f(x_0)$ and $f(x_1)$ are different
 \Rightarrow root is between x_0 and x_1

INTERVAL BISECTION

Want to find sign of
function $f(x)$ at point x .
If function has a root in interval $[a, b]$,
then $f(a) \neq f(b)$.

Start with interval $[a, b]$

9. Questionnaire for Study of Nurses

QUESTIONNAIRE FOR NURSES

The following brief questionnaire is part of a research project currently being conducted at this hospital. No names of individuals are used, so please answer every question as truthfully and completely as possible.

Number of years employed
at Waterbury Hospital _____

Your age _____ -

Your degree (circle one) RN LPN PN

Have you ever worked at Yes No
a small hospital (under
150 beds)?

Would you prefer to work Yes No
at a small hospital?

Please circle all of the following con-
ditions with which you are dissatisfied
here:

Fellow nurses

Vacations

Nursing superiors

Working conditions

Doctors

General atmosphere in
hospital

Pay

Anything else _____

Please circle answers to questions on next two pages.

2002-03

—
—
—

— 10 —

1. True False I am often sick to my stomach.
2. True False I work under a great deal of strain.
3. True False I cannot keep my mind on one thing.
4. True False I worry over money and business.
5. True False I frequently notice my hand shakes when I try to do something.
6. True False I have diarrhea ("the runs") once a month or more.
7. True False I do not tire quickly.
8. True False I am about as nervous as other people.
9. True False I worry quite a bit over possible troubles.
10. True False I am often afraid that I am going to blush.
11. True False I have very few headaches.
12. True False I have nightmares every few nights.
13. True False I sweat very easily even on cool days.
14. True False I blush as often as others.
15. True False When embarrassed I often break out in a sweat which is very annoying.
16. True False I feel hungry almost all the time.
17. True False Often my bowels don't move for several days at a time.
18. True False I practically never blush.
19. True False My hands and feet are usually warm enough.
20. True False I have a great deal of stomach trouble.
21. True False At times I lose sleep over worry.
22. True False I do not often notice my heart pounding and I am seldom short of breath.
23. True False My sleep is restless and disturbed.
24. True False I often dream about things I don't like to tell other people.
25. True False I am easily embarrassed.
26. True False My feelings are hurt easier than most people.
27. True False I often find myself worrying about something.

28. True False I wish I could be as happy as others.
29. True False I cry easily.
30. True False I feel anxious about something or someone almost all of the time.
31. True False I am usually calm and not easily upset.
32. True False It makes me nervous to have to wait.
33. True False At times I am so restless that I cannot sit in a chair for very long.
34. True False I have often felt that I faced so many difficulties I could not overcome them.
35. True False At times I have been worried beyond reason about something that really did not matter.
36. True False I do not have as many fears as my friends.
37. True False I am more self-conscious than most people.
38. True False I am the kind of person who takes things hard.
39. True False I am a very nervous person.
40. True False Life is often a strain for me.
41. True False Sometimes I become so excited that I find it hard to get to sleep.
42. True False I have been afraid of things or people that I know could not hurt me.
43. True False I certainly feel useless at times.
44. True False I find it hard to keep my mind on a task or job.
45. True False At times I think I am no good at all.
46. True False I am not at all confident of myself.
47. True False I am happy most of the time.
48. True False At times I feel that I am going to crack up.
49. True False I am very confident of myself.
50. True False I don't like to face a difficulty or make an important decision.

• aedebus will be able to do this. 100

• the no deposit clause

IX. Bibliography

1. Abramson, J. H., "The Cornell Medical Index as an Epidemiological Tool," American Journal of Public Health, 56:287-298, 1966.
2. Barclay, Martin, "The Measurement of Anxiety," Journal of General Psychology, 61: 189-203, 1959.
3. Barnes, Elizabeth, People in Hospital, London, MacMillan and Co., Lts., 1961.
4. Brodman, Keeve, et al, "The Cornell Medical Index: An Adjunct to Medical Interview," Journal of the American Medical Association, 140:530-534, 1949.
5. Brodman, Keeve, et al, "The Cornell Medical Index -- Health Questionnaire. III. The Evaluation of Emotional Disturbances," Journal of Clinical Psychology, 8:119-124, 1952.
6. Buss, Arnold H., et al, "The Measurement of Anxiety," Journal of General Psychology, 61:189-203, 1959.
7. Cameron, Normal, The Psychology of Behavior Disorders: A Biosocial Interpretation, Boston, Houghton Mifflin Company, 1947.
8. Cannon, Ida M., "Some Social and Personal Problems of Surgical Patients," Bulletin of the American Hospital Association, 9:34-39, 1935.
9. Cartwright, Ann, Human Relations and Hospital Care, London, The Free Press of Glencoe, 1963.
10. Cohen, M. E., "Neurocirculatory Asthenia," Medical Clinics of North America, 33:1343-1364, 1949.
11. Fiorica, Vincent, and Siegman Muehl, "Relationship between Plasma Levels of 17-Hydroxycorticosteroids and a Psychological Measure of Manifest Anxiety," Psychosomatic Medicine, 24: 596-599, 1962.

12. Freidson, Eliot, ed., The Hospital in Modern Society, London, The Free Press of Glencoe, 1963.
13. Freud, Sigmund, The Problem of Anxiety, translated by Henry Alden Bunker, New York, W. W. Norton and Co., 1936.
14. Girdwood, Ronald H., and Malcolm B. Ballinger. "The Factors that Commonly Worry the Patient in Hospital," Edinburgh Medical Journal, 56: 347-352, 1949.
15. Goldstein, Michael J., and James O. Palmer, The Experience of Anxiety, New York, Oxford University Press, 1963.
16. Hall, Calvin S., and Gardner Lindzey, Theories of Personality, New York, John Wiley and Sons, Inc., 1957.
17. Hinkle, Lawrence E., Jr., and Harold G. Wolff, "Health and the Social Environment: Experimental Investigations," in Explorations in Social Psychiatry, edited by Alexander H. Leighton, et al, New York, Basic Books, Inc., 1957.
18. Hollingshead, August B., Two Factor Index of Social Position, New Haven, 1957. (Mimeographed).
19. Hollingshead, August B., and Frederick C. Redlich, Social Class and Mental Illness, New York, J. Wiley and Sons, Inc., 1958.
20. Horney, Karen, Our Inner Conflicts, New York, W. W. Norton and Co., 1945.
21. Hospitals, 40:51-53, 1966.
22. Hospitals, 41:59-60, 1967
23. Janis, Irving L., Psychological Stress, New York, John Wiley and Sons, Inc., 1958.

24. Johannsen, Walter J., "A Re-examination of the Hippuric Acid--Anxiety Relationship," Psychosomatic Medicine, 24: 569-578, 1962.
25. Kark, E., A. Zaslany, and B. Ward, "The Health of Under-graduate Students on Entry to the Hebrew Uni-versity in Jerusalem," Israel Medical Journal, 22:147-155, 1963.
26. Kaufman, M. Ralph, Abraham N. Fransblau, and David Kairys, "The Emotional Impact of Ward Rounds," Journal of the Mount Sinai Hospital, 23:782-803, 1956.
27. Lacey, John I., "The Evaluation of Autonomic Responses: Toward a General Solution," Annals of the New York Academy of Sciences, 67:123-164, 1956.
28. Lindemann, Erich, "Observations of Psychiatric Sequelae to Surgical Operations in Women," American Journal of Psychiatry, 98:132-139.
29. Mandler, G., J. M. Mandler, and E. T. Uviller, "Auto-nomic Feedback: The Perception of Autonomic Activity," Journal of Abnormal and Social Psychology, 56:367-373, 1958.
30. Matarazzo, Ruth G., Joseph D. Matarazzo, and George Saslow, "The Relationship between Medical and Psychiatric Symptoms," Journal of Abnormal and Social Psychology, 62:55-61, 1961.
31. Mathew, K. V., "Emotional Aspects of a Hospitalized Patient," Journal of the Christian Medical Association of India, 37:632-636, 1962.
32. Meyersdale Republican, February 25, 1965.
33. Mittelmann, Bela, et al, "Personality and Psychosomatic Disturbances in Patients on Medical and Surgi-cal Wards: A Survey of 450 Admissions," Psychosomatic Medicine, 7:220-223, 1945.

34. Moore, K. B., and N. McCravy, Jr., "Family Interaction as a Factor in Prolonging Hospitalization," Journal of Nervous and Mental Disease, 136: 485-491, 1963.
35. Platt, B. S., T. P. Eddy, and P. L. Pellett, Food in Hospitals, London, Oxford University Press, 1963.
36. Revans, R. W., "The Adjustment of Nurse and Patient to Hospital Life," Journal of Chronic Disease, 15:857-865, 1962.
37. Revans, R. W., "The Hospital as a Human System," Physica in Medicine and Biology, 7:147-155, 1962.
38. Sarason, Irvin G., "Empirical Findings and Theoretical Problems in the Use of Anxiety Scales," Psychological Bulletin, 57:403-415, 1960
39. Saslow, George, Robert M. Counts, and Philip H. DuBois, "Evaluation of a New Psychiatric Screening Test," Psychosomatic Medicine, 13:242-253, 1951.
40. Schimmel, E. M., "The Hazards of Hospitalization," Annals of Internal Medicine, 60:100-110, 1964.
41. Spiegel, Allen D., and Harold W. Demone, "Questions of Hospital Patients--Unasked and Unanswered," Postgraduate Medicine, 43: 215-218, 1968.
42. Steiner, Heiri, and Jean Gebser, Anxiety: A Condition of Modern Man, Geneva, Editions Alpha S. A., 1962.
43. Sullivan, Harry Stack, Conceptions of Modern Psychiatry, New York, W. W. Norton and Co., 1940.
44. Sullivan, Harry Stack, The Interpersonal Theory of Psychiatry, edited by Helen Swick Perry and Mary Ladd Gawel, New York, W. W. Norton and Co., 1953.

45. Sullivan, Harry Stack, Clinical Studies in Psychiatry, edited by Helen Swick Perry, et al, New York, W. W. Norton and Co., 1956.
46. Sullivan, Harry Stack, The Fusion of Psychiatry and Social Science, New York, W. W. Norton and Co., 1964.
47. Taylor, Janet A., "The Relationship of Anxiety to the Conditioned Eyelid Response," Journal of Experimental Psychology, 41:81-92, 1951.
48. Taylor, Janet A., "A Personality Scale of Manifest Anxiety," Journal of Abnormal and Social Psychology, 48:285-290, 1953.
49. Whitehorn, John C., "Stress and Emotional Health," American Journal of Psychiatry, 112:773-781, 1956.
50. Whitehorn, John C., "Psychiatric Implications of the Placebo Effect," American Journal of Psychiatry, 114: 661-664, 1958.
51. World Almanac and Book of Facts, edited by Luman H. Long, New York, Newspaper Enterprise Association, Inc., 1968.





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